THE IRON AGE

THURSDAY, JANUARY 28, 1892.

Electric Metal Working.

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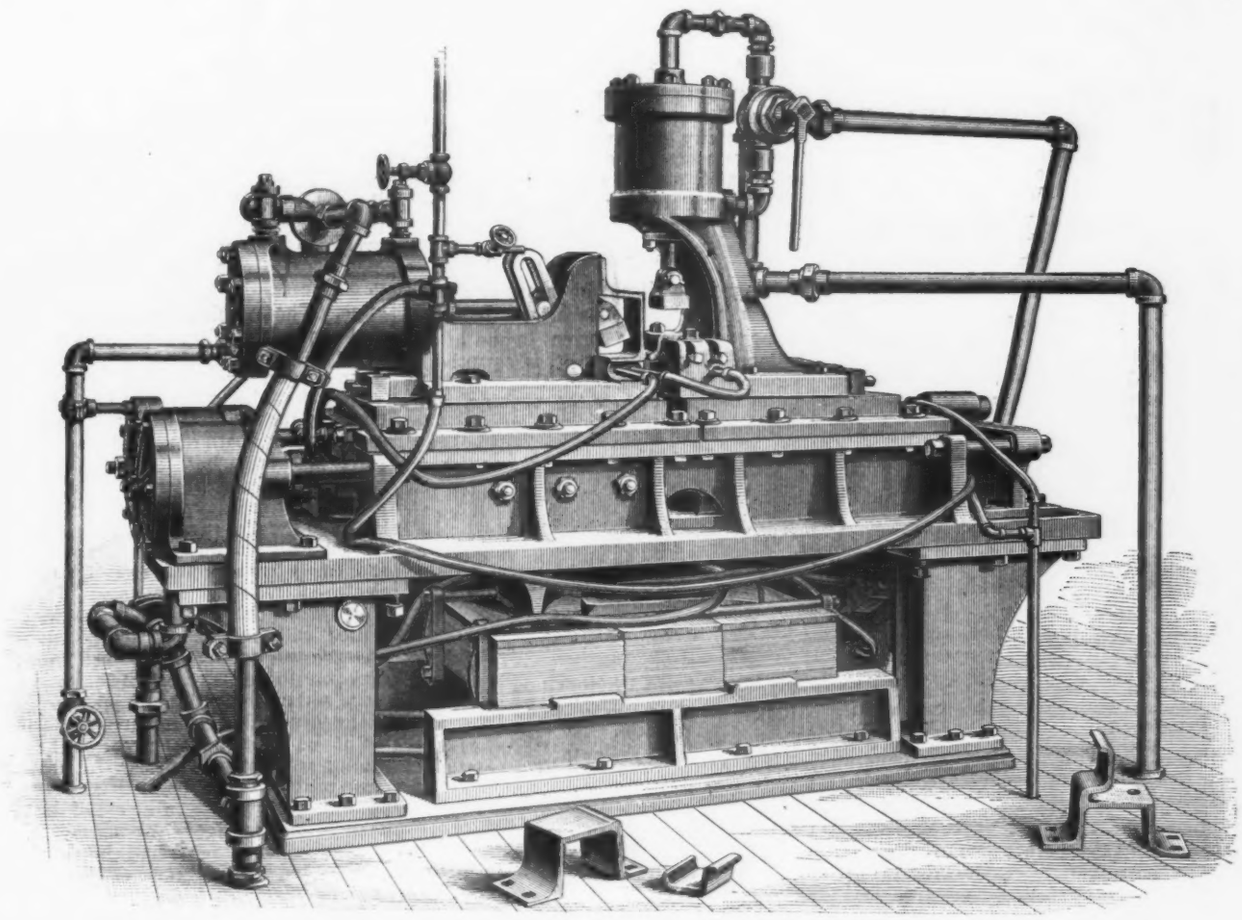
It is the purpose of the following article to describe, first, the electric metal working machines and the principles governing their construction and operation, and then to show what has been done up to the present time in welding and working pure metals and alloys by means of the electric current. In selecting our illustrations for the latter we have been governed by one impulse, and that is, to present only such material as has been introduced in a commercial way. Laboratory experiments have been, of course, omitted, since their value from a business point has not yet been determined. It is impossible to predict the future position to be occupied by this new application of an old agent, but judging by its wonderfully rapid growth and the many industries in which it has made for itself a prominent place, we may safely conclude that it will occupy a place more important than is even now dreamed of.

History.

The art of electrically working metals was discovered several years ago by Professor Elihu Thomson, while lecturing before the Franklin Institute of Philadelphia, by the accidental melting together of the coarse wires of an induction coil. From this simple incident, and the train of experiments and research following quickly in its wake, has come the present development of the art. In August, 1886, United States Letters Patent were granted to Professor Thomson for a method of electric welding and for a variety of apparatus for operating the process. Shortly after this the new art was fully described by the inventor in a paper read before the Society of Arts in Boston, and which was illustrated by machines and a variety of welded specimens. Exhibitions were afterwards made at Buffalo, the American Institute Fair in New York, at Malden, Mass., St. Louis and Minneapolis.



RAIL-CHAIR ELECTRIC WELDING MACHINE AT THE WORKS OF THE JOHNSON COMPANY.

Organization.

The Thomson Electric Welding Company was organized in April, 1888, to operate Professor Thomson's invention in the United States, the capital stock of the company at first being $500,000, which was afterwards increased to $1,000,000. The offices first occupied by the company were in the Mason Building, Boston, the manufacturing and experimental work being carried on in a small building belonging to the Thomson-Houston Electric Company, at Lynn, where a force of nine men were employed. The business increased so rapidly that the manufacturing facilities had to be enlarged in order to produce the apparatus required to supply the growing demand. The buildings on Federal street were erected and fitted with special machinery for the work in hand. In January, 1889, the factory was moved into new quarters, and in the following June the present two-story front was erected in Lynn. During the same month the Boston offices were removed to their present quarters, 89 State street.

Applications.

The first machine placed in commercial operation was in July, 1888, at the wire works of John A. Roebling's Sons Company, Trenton, N. J. This machine has since been in almost constant operation, much of the time night as well as day. Other machines have been added to the plant, which now consists of seven weld ers, adapted for various classes of wire and similar work.

Machines are in practical operation at the present time, turning out work in brass and copper, ranging from No. 16 wire gauge up to rods having a cross sectional area of 3 square inches. In steel and iron the section varies from No. 16 wire gauge to a sectional area of 8¼ square inches. Experimentally, a wire $\frac{3}{100}$ inch in diameter has been welded, and, as far as the large areas are concerned, it depends more on the demand than to any limitation there may be to the process. The greatest trouble experienced in the welding of extremely fine wire is the difficulty of maintaining the abutting ends in contact. This, as it will be seen, is a job requiring extreme delicacy and one in which the wires are very apt to slip by one another. Dissimilar metals are easily united, such joints having been made between round

bars of iron and brass of a diameter of 2 inches, and a vast variety of smaller work has been accomplished.

From the very first the Navy Department has taken the greatest interest in the electric welding process. In February, 1890, a board consisting of four naval officers convened at Boston under orders of the Secretary of the Navy, to visit the company's works and investigate the process. A most favorable report was made, recommending the general adoption of the company's machines both on board ships of war and in the navy yards. Welders of large capacity are now being installed at the Brooklyn and Norfolk Navy yards, and other apparatus is being constructed for the Navy Department.

In the manufacture of carriages, wagons, &c., the process has proved of special advantage, and in some of our largest works of this character the old-time forge and hand work have been entirely superseded by electric welders. The construction of these machines and the demand they directly created in their own manufacture tended to solve some problems in engineering, reflecting the greatest credit upon those who had the work in hand. In the construction of large universal machines castings of copper have been required larger than ever before demanded for electrical purposes. Several such castings are now in the works, weighing from 1200 pounds to 1500 pounds each. The welding machines have been received with the greatest favor abroad, and are now doing commercial work in England and on the Continent.

Adaptability.

The following list comprises the metals, alloys and combinations which have been so far actually welded with success by the electric current:

METALS.

Wrought iron,	Cast copper,	Antimony,	Aluminum,	Manganese,
Cast iron,	Lead,	Cobalt,	Silver,	Magnesium.
Malleable iron,	Tin,	Nickel,	Platinum,	
Wrought copper,	Zinc,	Bismuth,	Gold (pure),	

ALLOYS.

Various grades of tool steel,	Cast brass,	Aluminum bronze,
Various grades of mild steel,	Gun metal,	Phosphor bronze,
Steel castings,	Brass composition,	Silicon bronze,
Chrome steel,	Fuse metal,	Coin silver,
Musbet steel,	Type metal,	Various grades of gold.
Stubs steel,	Solder metal,	
Crescent steel,	German silver,	
Bessemer steel,	Aluminum alloyed with iron,	
	Aluminum brass,	

COMBINATIONS.

Copper to brass,	Brass to tin,	Silver to platinum,
Copper to wrought iron,	Brass to mild steel,	Wrought iron to Musbet steel,
Copper to German silver,	Wrought iron to cast iron,	Wrought iron to Stubs steel,
Copper to gold,	Wrought iron to cast steel,	Wrought iron to Crescent steel,
Copper to silver,	Wrought iron to mild steel,	Wrought iron to cast brass,
Brass to wrought iron,	Wrought iron to tool steel,	Wrought iron to German silver,
Brass to cast iron,	Gold to German silver,	Wrought iron to nickel,
Tin to zinc,	Gold to silver,	Tin to lead.
Tin to brass,	Gold to platinum,	
Brass to German silver,		

Glancing through this list, it will be noticed that there are many metals, such as aluminum, lead, zinc, copper, &c., which have hitherto resisted all attempts to weld them, or when welding have proved to be exceedingly difficult to handle.

A further application—we will not say of the electric welding process, but which is a direct outcome of the work performed—is that of electric brazing and the bending and upsetting of metals. Experiments made toward perfecting the electric welding process early showed that metals could be locally heated, no matter what their shape, and could then be treated in precisely the same way as if they had been heated in the fire. This branch has been developed into an important industry, and we now find concerns utilizing the electric current for making difficult shapes and for drawing and upsetting.

The Electric Welding Process.

An electric welding machine requires a current of extremely low voltage and great quantity, this being what is known as the heating current. Its electromotive force being so insignificant, in the largest machines being only about one volt, its power to overcome resistance is extremely slight, while at the same time its power for generating heat in the material it is passing through is augmented.

It is evident that the slight resistance created at the point of contact of the two pieces to be welded generates heat. The phenomenon here is precisely similar to that taking place in the incandescent and arc lights, where in the former the resistance of the carbon filament causes the raising of the filament to incandescence, while in the latter case the distance between the carbon points produces the arc. It is further obvious that this resistance, supposing the pieces to be welded to be in metallic contact, varies directly as the conductivity of the material. It therefore becomes necessary, even in the welding of sections of wire of the same size but of different materials or composition, to vary the strength of the current.

The "Kicker."

The machine itself, by means of a transformer, which is hereafter described, changes the electric current to one of low voltage. Consequently it is essential to regulate the strength of the current by means independent of the machine. The rheostat was first employed, but as it introduced a resistance which merely served to reduce the current without any compensating work, it was wasteful. This is now formed by a reaction coil or "kicker," as it is familiarly called, the invention of H. Lemp, one of the electricians connected with the works. This consists of a ring of laminated iron, one portion of which, about one-sixth, is reduced in section to receive a coil of wire through which the current from the dynamo passes. Mounted upon a shaft placed in the center of the ring is a hood of thick copper covering the face and two sides of the ring for a distance about equal to that occupied by the coil. When this hood, which can be moved to any part of ring by a handle, is diametrically opposite the coil, the reaction in the coil is maximum and the current is reduced to the minimum. When the hood covers the coil the reverse takes place. By placing the hood at the proper intermediate point, the desired current is produced. Should a short circuit occur when the hood is near or over the coil, the increased current would throw it back, thereby bringing the coil into action and preventing damage. Hence the name "kicker."

The Current Employed.

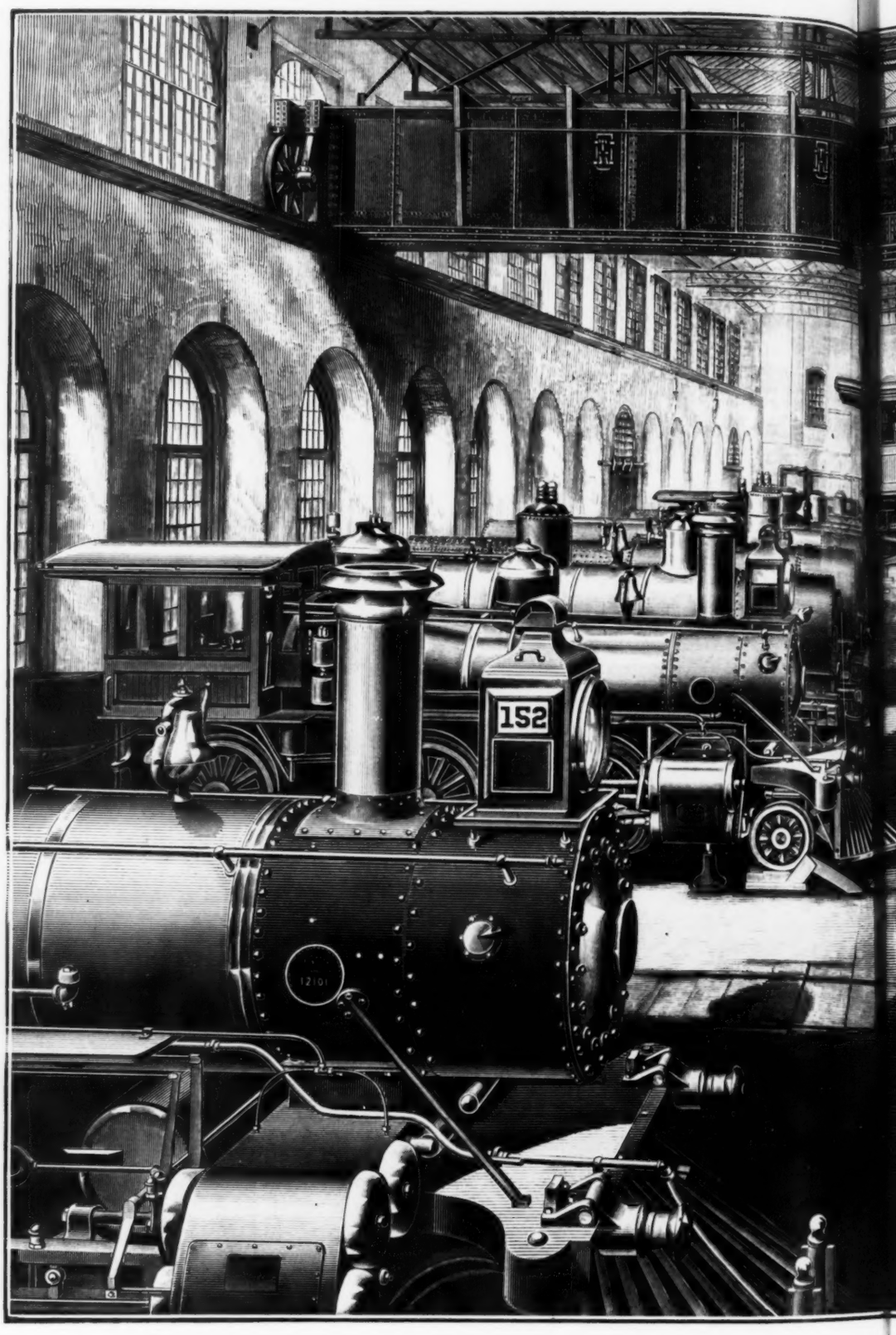
Our readers will understand that the same current measured in watts may be present under two different conditions, each of which has its own peculiar adaptation. The watt being the product of the volt or electromotive force by the ampère which measures the quantity of the current, it is evident that to obtain the same transmission of electric energy we may have an extremely low voltage with a great many ampères, or *vice versa*, and get the same effect in the shape of watts. In other words, to use a simile which has before appeared, the electric current may be compared to a stream of water. If we take a quantity of water and pass it in one minute through a large pipe, and then pass the same quantity in the same time through a smaller pipe, in the former case the issuing water will have little power to overcome resistance, while in the latter case it may issue with tremendous force, in both cases the total amount being the same. The peculiarity of the current is that one of low voltage and great quantity is better for the production of heat than when it is arranged the other way.

Electric welding has been performed by means of the continuous current, by means of secondary batteries, and also by unipolar machines, but the most favorable results have been obtained from the employment of the alternating current. This is due to the fact that this current can be economically produced in large volume and easily transformed so as to have low electro-motive force or voltage. The current, further than this, can be readily controlled and can be distributed at high pressure over conductors of small sections, thus permitting its transmission to a distance without much loss of energy. One of the principal obstacles arising with the use of the continuous current is that the heating will not take place with absolute uniformity in the two abutting ends. As has been observed in the case of the carbons in an arc light, the current in its passage conveys the small incandescent particles of carbon from one carbon to the other, and when the same current is applied to the heating of two pieces of metal the current acts in precisely the same way and one is heated to a greater extent than the other.

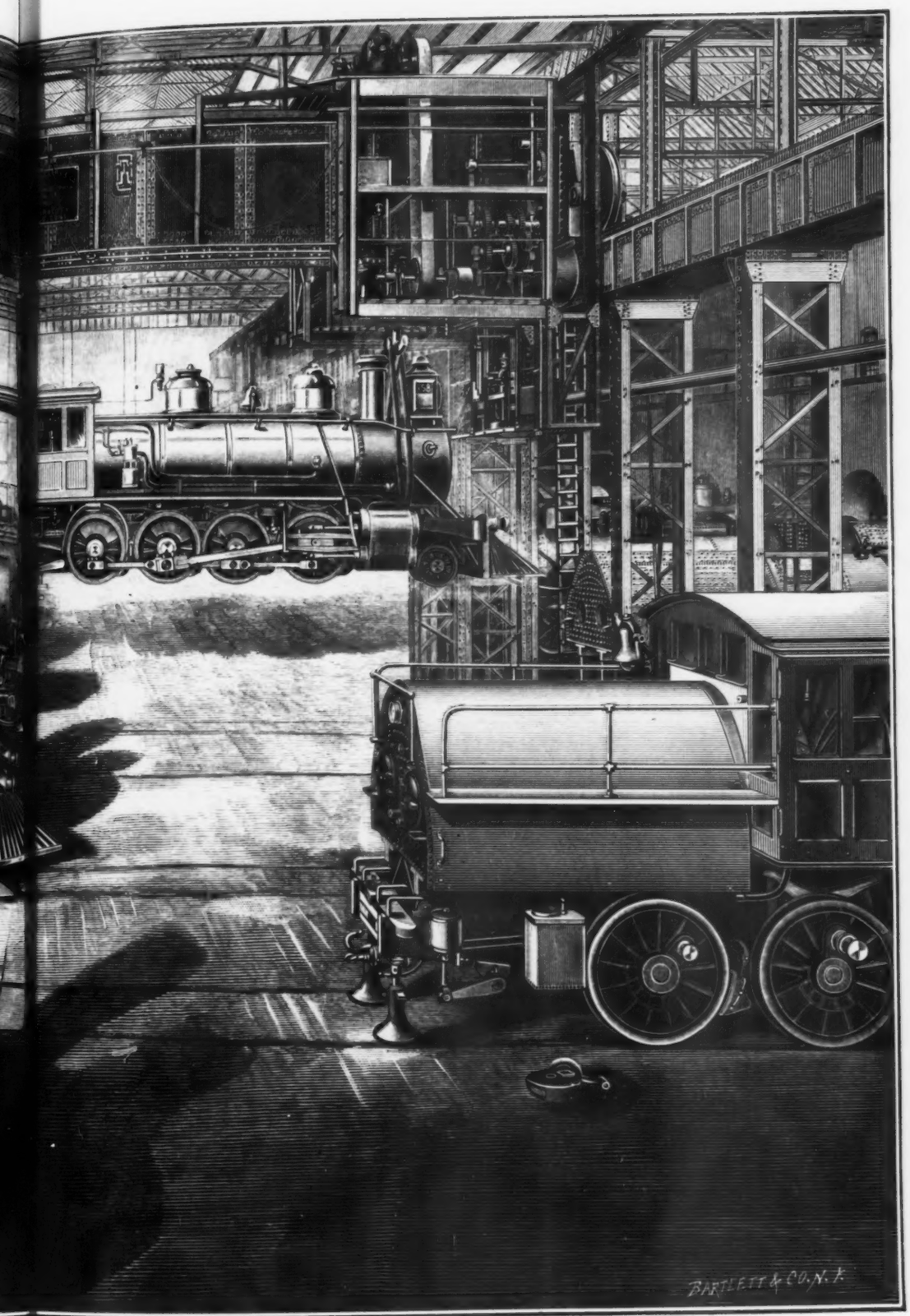
The most convenient method of obtaining this low voltage current depends upon induction. The principal is the same as that found in the induction coil of an ordinary secondary battery, but the construction or arrangement of the two coils is reversed. An iron core is provided, and around this is a wire coil carrying the dynamo current. But the secondary coil, instead of being of very fine wire and correspondingly high resistance, as in the common induction coil, consists of a single casting of copper of the requisite shape, having a minimum resistance.

The Transformer.

One of the first methods of transforming the alternating current into one of low voltage was that shown in Fig. 2. The current from the alternating generator passes through the coil B, wound around the iron ring A. The secondary coil C consists in this case of a few turns of very



ONE-HUNDRED TON TRAVELING CRA



RANE AT BALDWIN LOCOMOTIVE WORKS.

Fig. 15.—*Bar Welded to Disk.*

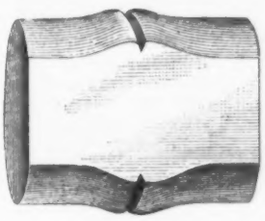


Fig. 16.—*Weld in Steel Planed Down.*

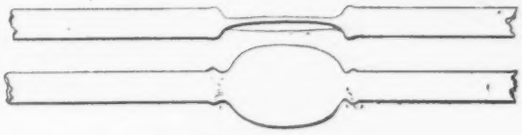


Fig. 17.—*Weld Hammered Out.*

Fig. 23.—*Two Bars Welded to One.*

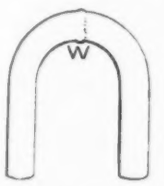


Fig. 18.—*Bar Welded and Bent at Weld.*

Fig. 19.—*Rock Drill.*

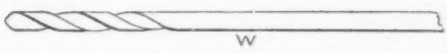


Fig. 20.—*Twist Drill, Shank Welded On.*

Fig. 21.—*Head Welded on Screw.*

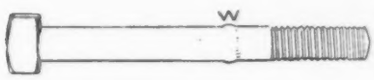


Fig. 22.—*Screw Bolt Made by Welding.*

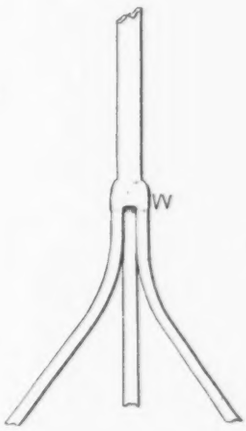


Fig. 24.—*Three Bars Welded to One.*

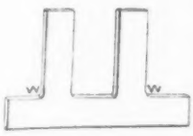


Fig. 26.—*Two Flat Bars Welded to One.*

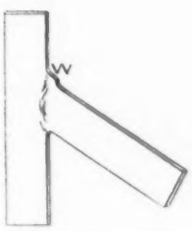


Fig. 29.—*Bar Welded at an Angle.*

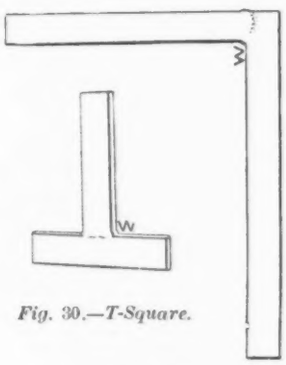


Fig. 30.—*T-Square.*

Fig. 31.—*Carpenter's Square.*

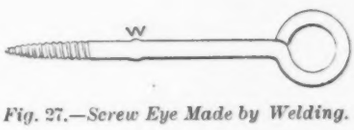


Fig. 27.—*Screw Eye Made by Welding.*

Fig. 28.—*Wrench.*

Fig. 25.—*Similar to Fig. 23.*

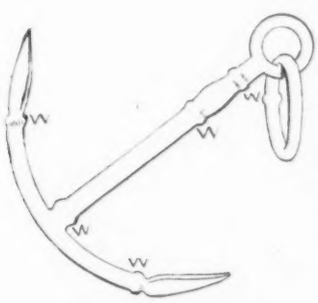


Fig. 35.—*Anchor Made by Electric Welding.*

Fig. 34.—*Pick.*

Fig. 41.—*Point Welded On.*

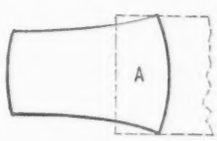


Fig. 38.—*Blade Welded to Body.*

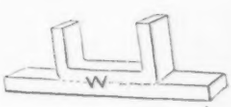


Fig. 32.—*U-Shape Welded to Bar.*

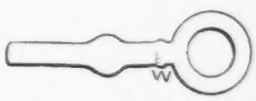


Fig. 33.—*Welded and Upset.*

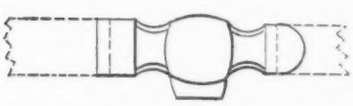


Fig. 36.—*Heads Welded to Body.*

Fig. 37.—*Cutting Point Welded to Bar.*

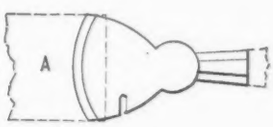


Fig. 39.—*Blade and Head Welded to Body.*

Fig. 40.—*Point Welded On.*

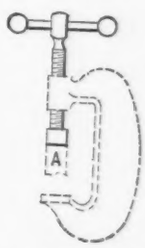


Fig. 42.—*End of Screw Welded On.*

ELECTRIC METAL WORKING.

heavy copper wire. The large section of this wire itself and its short length produce an almost inappreciable electrical resistance, and this, therefore, governs the voltage of the induced current which is carried off by it. From this secondary coil C the current passes through the rods E D, the abutting ends of which are welded. Another form, and which came out in 1886, is shown in Fig. 3. Here the current first passes through the coil B, which in this case is a ring placed within the iron coil A, the induced current being carried off by the single loop of copper of very large section C. Later forms of transformers are shown in Figs. 4 to 10, inclusive. These give a good idea of the transformers as constructed and arranged at the present time. In each case the dynamo current is passed through the primary coil, about which is placed a solid piece of copper of large section and which serves as the secondary. It is this construction that made necessary the making of copper castings of unusual size, since it was necessary to make the secondary coil in one piece in order to obtain low resistance, which would not be possible if it were built up.

The type of transformer now used, and which has been found to give the best results, is that in which the primary and secondary coils are concentrically placed in an iron core, so as to oblige all lines of force generated by the former to cut through the latter. If the two windings are placed side by side in an iron core or upon opposite legs, as shown in Fig. 4, there is a tendency to form constant poles at the point where the two windings meet, due to the leakage of lines of force. The leakage will depend upon the distance between the two legs and upon the length of the magnetic circuit. It has been increased and turned to advantage by Professor Thompson for obtaining constant current in the secondary, while the primary is supplied with constant electromotive force, this construction being shown in Fig. 5. Various forms of secondary may be employed to work in accordance with this principle, some of these being shown in Figs. 6 to 10, inclusive. For mechanical reasons and convenience the forms shown in Figs. 6 and 7 are mostly used, experience having shown that there is practically no leakage. This construction also permits of removing the primary without disturbing the secondary in the least.

The transformer in the machine, of which an engraving is presented on our first page, consists of a massive copper casting of rectangular shape and formed with a central rectangular opening. In this opening is placed the iron core consisting of insulated sheets. In each side face of the copper casting is formed a square groove to receive the copper coils conveying the dynamo current—in this case the copper coils being formed of strips. It will be seen that the same principle is here present—an iron core surrounded by a primary coil of small strips and a secondary coil of one turn of large cross section.

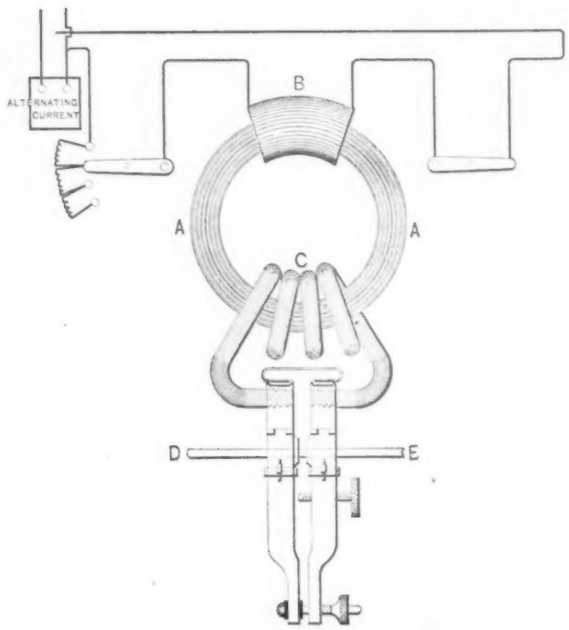


Fig. 2.—Early Type of Transformer.

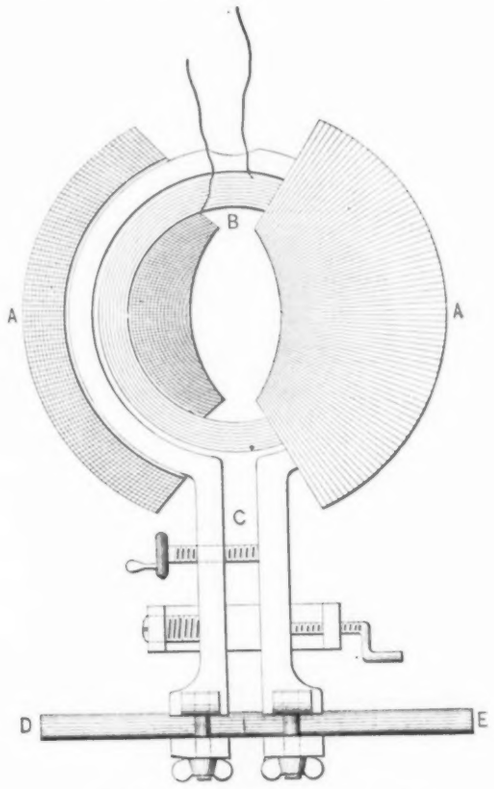


Fig. 3.—Later Type of Transformer.

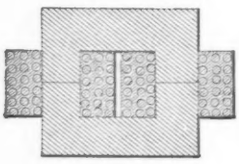


Fig. 4.

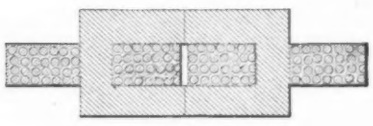


Fig. 5.

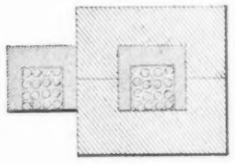


Fig. 6.

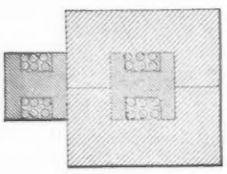


Fig. 7.

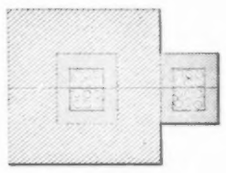


Fig. 8.

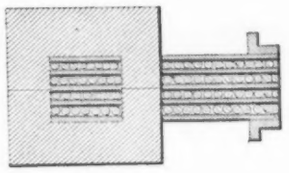


Fig. 9.

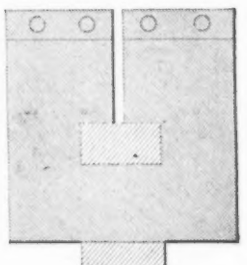


Fig. 10.

Present Types of Transformers.

ELECTRIC METAL WORKING.

The Automatic Machine.

In all small sections and in certain metals which fall down quickly when they approach the melting point, such as aluminum, lead, tin, &c , it is absolutely

Fig. 43.—Aluminum.

Fig. 44.—Bicycle Tire Bent at Weld.

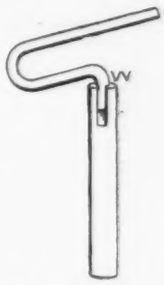


Fig. 46.—Bicycle Saddle Post.

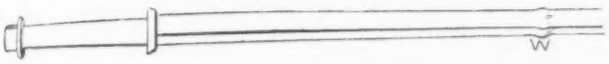


Fig. 47.—Axle.

Fig. 45.—Bicycle Tire.

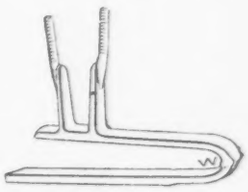


Fig. 52.—Clip.

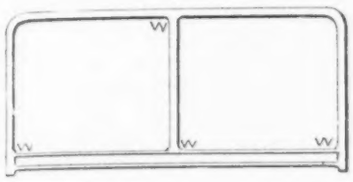


Fig. 48.—Dashboard Frame.

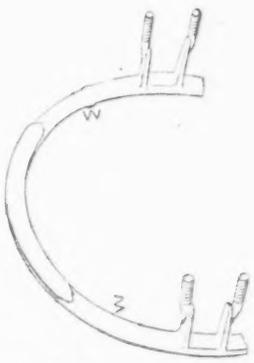


Fig. 50.—Fifth Wheel.

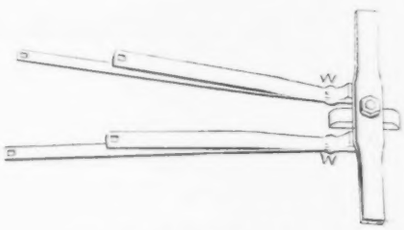


Fig. 53.—Double Perch Frame.

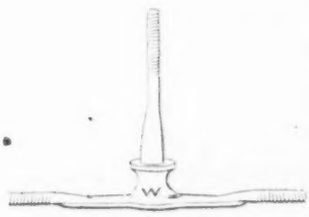


Fig. 49.—Clip King Bolt.

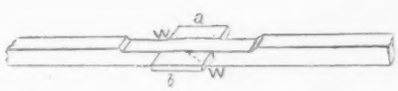


Fig. 51.—Axle Spring Bed.

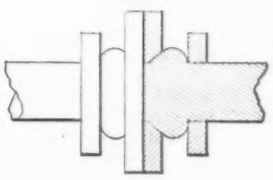


Fig. 58.—Section, Showing Upset Collar Finished.

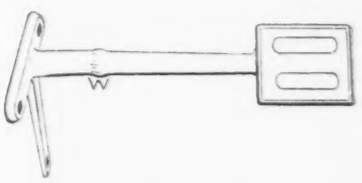


Fig. 54.—Carriage Step.

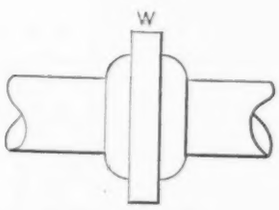


Fig. 59.—Upset Collar.

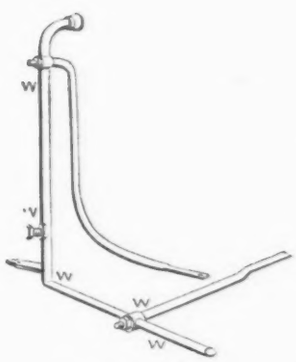


Fig. 55.—Seat Frame.

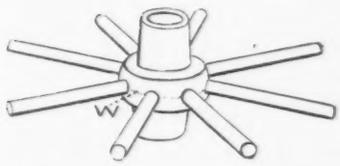


Fig. 56.—Wheel Formed by Electric Welding.

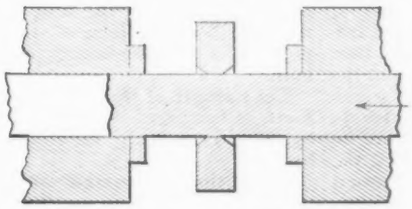


Fig. 60.—Parts Arranged for Welding.

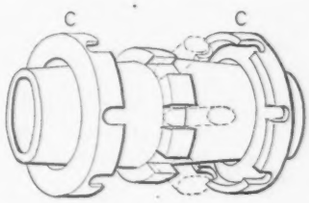
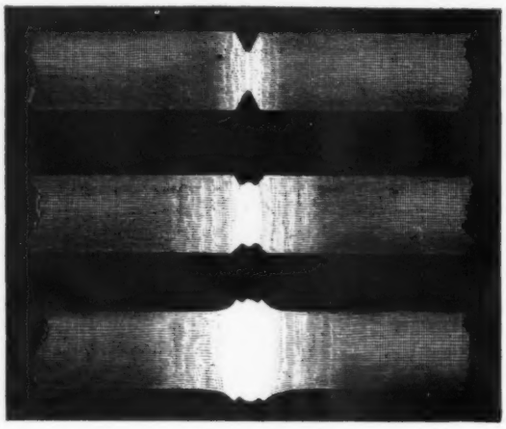


Fig. 57.—Parts of Wheels Assembled for Welding.

ELECTRIC METAL WORKING.

essential that the machine should be automatic. In general all electric welding consists first in bringing the two ends to be united in metallic contact, if possible, then to pass the current through them, and as the abutted ends become heated to the welding temperature, press the two parts forcibly together. In welding large sections this can be controlled by hand, since the heating is comparatively slow and the increase in temperature can be



Figs. 11, 12, 13.—*Appearance of Weld at Different Stages.*

ELECTRIC METAL WORKING.

readily observed, but in small sections, and as stated, with certain metals, where there is no external evidence of heat being present, the machine is depended upon for doing the work. In welding aluminum, for instance, the two pieces are clamped between copper jaws, one of which is movable toward and from the other. The two ends being brought together, the current is turned on, and at the instant the points have been heated to a melting temperature, the movable clamp is pushed forward, the softened metal is thrown out on each side in the shape of an exaggerated burr, Fig. 43, and the electric current turned off at the same instant.

The uniformity of the result depends more closely upon the pressure applied to the movable clamp than upon any other condition. This pressure, which is governed by the size and material of the wire to be welded, should be in accordance with what we might term the plasticity of the metal when it has been brought to the proper temperature. If the current should be too strong, the time necessary for welding alone would be affected, and in this case would be shortened. The pressure necessary is controlled directly by the metal itself, and therefore varies and is only to be ascertained by actual experiment. The pressure required for steel is approximately 1800 pounds to the square inch of section, and this, we may observe in parenthesis, explains why in the large welding machine shown in Fig. 1 hydraulic plungers are introduced in order to provide this pressure. In iron a pressure of some 1200 pounds to the inch is required, while for copper only 600 pounds is necessary.

It is of the utmost importance to disconnect the current at the instant a weld is made. Its continuance would only result in further melting the metal and in destroying the work already done. The movement in the case of a ¼ inch aluminum wire is about ¼ inch, the surplus matter being thrown out. Figs. 11 to 13, inclusively, show very clearly, first, the shape of the abutting ends of a steel rod of any section from ⅛ inch up to 2 inches in diameter, and also the effect produced at different stages of the process. When the two ends have been brought forcibly in contact and the current turned on, the first indication of the passage of the current is in the change in color at the points of contact, which become a dull red and then brighter, and, finally, quite hot. As the conical points heat the metal is softened, so that with the pressure it gives way and the area in contact is thus gradually increased. Owing to the fact that the resistance at all points of the circular section is not the same the heating takes place unequally, and it is therefore advisable in large work, at intervals of a few seconds, to throw off the current in order that the heat already imparted to the metal may diffuse itself uniformly. When this has taken place, as can be perceived readily by the operator, the current is again turned on until an enlarged section has been heated. In this way the process continues until the entire section of the metal has been heated to a white heat, until the two parts have been forcibly pushed together, and then the operation having been completed, the current is turned off.

The Strength of an Electric-Welded Joint.

The appearance of the electric weld in a ½ inch steel bar after it has been planed down longitudinally is shown in Fig. 14.

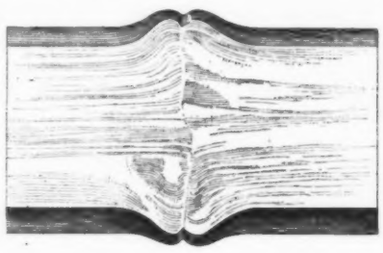


Fig. 14.—*The Joint in a Welded Steel Bar, Polished and Etched.*

In making this engraving the planed surface was first highly polished and then subjected to dilute acid, bringing out the grain, as shown in our drawing, which has been slightly enlarged in order to more clearly show the grain. It will be observed that at the point of contact the grain has been deflected radially toward the surface, but has in no case been broken up. Its integrity is very apparent, the only change being in the direction. In the case of two metals, the line of demarkation separating the two ends is very clearly defined and has the appearance of two pieces of soft material which have been pressed together. Prof. A. E. Dolbear of Tuft's College has made many hundred tests of the tensile strength of electrically-welded bars of iron, steel and other metals. The results were of such a character that he stated that it was possible to weld both wrought iron and steel so that the weld is as strong as the same cross section in any other part of the bar. He had a number of bars welded by an expert blacksmith, the result being that the electrically-welded bars were very much stronger than those welded by hand.

Fig. 93 represents a bar of brass and iron united by combined electric welding and a mechanical joint or dovetail, which we describe further on. At, and on each side of, the weld the metals were turned off slightly and then the bar was subjected to strain until ruptured, as shown in the drawing. The break was in that portion of the bar which had not been reduced in diameter, proving that the joint was stronger than any other part.

The Horse-Power and Time Required.

We may state what is perhaps already well known to our readers, that an ampère, measuring the quantity of the electric current, multiplied by the volt, measuring the electromotive force or the property of the current to overcome resistance, produces the watt, 746 of which are considered equal to 1 horse-power, or 33,000 pounds raised 1 foot per minute.

Prof. Alexander B. W. Kennedy, in a report on the electric welding process, said he "found that 2½-inch iron tubes ¼ inch thick were welded in 61 seconds, the net horse-power required at this speed being 23.4 (say 33 indicated horse-power) per square inch of section." Brass tubing required 21.2 net horse-power. About 60 total indicated horse power would be required for the welding of angle irons 3 x 3 x ½ inch in from two to three minutes. Copper requires about 80 horse-power per square inch of section, and an inch bar can be welded in 25 seconds. It takes about 90 seconds to weld a steel bar 2 inches in diameter.

General Advantages.

One of the principal advantages in the employment of the electric welding process lies in the fact that the operator, having presumably a little experience, knows while the welding is being performed whether the result is satisfactory or not; that is, watching all aspects of the heat he can tell perfectly, when the operation has been completed, whether his work has been successful or not. Another strong point lies in the rapidity of the process. In automatically welding sections of small sizes the work can be performed just as rapidly as the operator can insert and take out the separate pieces, the quickness of the work being solely dependent upon the rapidity of his own manipulation. This comes in in a more marked extent in the welding of large sections where the metal is quickly heated and the heat is continued until the welding temperature has been reached. The burr produced by the forcible expulsion, so to speak, of the metal radially, is readily overcome by means of a hammer, the heat required for welding being sufficient to afterward provide for the hammering down of the burr.

The strength of the electrically welded joint, as compared with the joint made by the old method, we have mentioned before.

One of the most marked features is to be found in the "cleanness" of the heat. There is no possibility of any hurtful, foreign substance entering into combination with the metal being heated.

Fig. 61.—Old and New Telegraph Wire Splice.

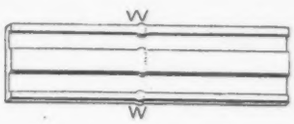


Fig. 62.—Welded Shape.

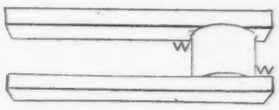


Fig. 63.—Two Bars Welded to Block

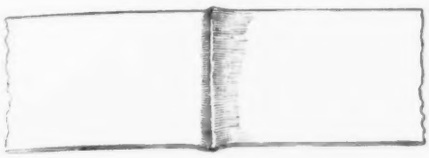


Fig. 64.—Thin Strip Welded.

Fig. 65.—Thin Strip Welded.

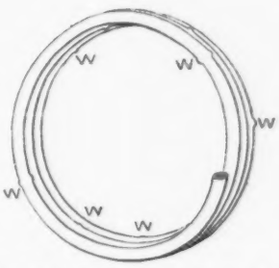


Fig. 66.—Coil of Pipe with Welded Joints.

Fig. 67.—Pipe Tested to Rupture.

Fig. 68.—Pipe.

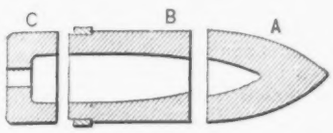


Fig. 76.—Projectile Ready for Welding.

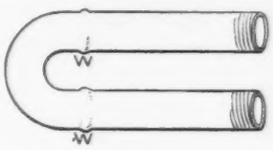


Fig. 69.—Cast-Iron Return Bend Welded to Wrought-Iron Pipe.

Fig. 71.—Wire Cable.

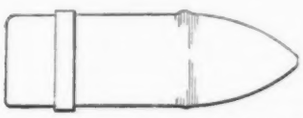


Fig. 77.—Projectile after Welding.

Fig. 72.—Wire Cable.

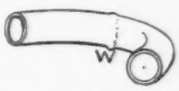


Fig. 70.

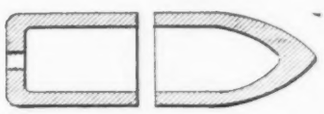


Fig. 78.—Projectile Formed of Two Parts.

Fig. 75.—Cable with End Welded to it.

Fig. 73.—Insulated Wire Welded.

Fig. 74.—Cable.

Fig. 79.—Chain Link.

Fig. 80.—Star Welded at Each Bend.

Fig. 81.—Chain.

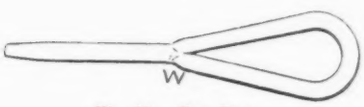


Fig. 83.—Eye Bar.

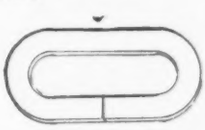


Fig. 82.—Flat Link.

Fig. 88.—Tooth Welded in Circular Saw.

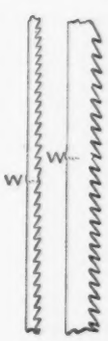


Fig. 89.—Band Saws Welded.

Fig. 84.

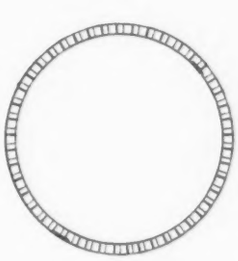


Fig. 85.

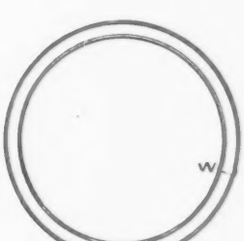


Fig. 86.

Parts of Fifth Wheel.

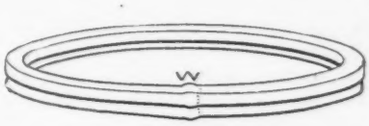


Fig. 87.—Fifth Wheel.

ELECTRIC METAL WORKING.

Hard tool steel can be welded without destroying its good qualities. We have before stated that the heating takes place at the point of contact of the two bars and that heating can be affected locally or at any desired point in a continuous bar. This has one special advantage in that the expenditure of energy is confined directly to the point desired and that there is no superfluous heating. In other words, a bar having been welded can be picked up within 3 or 4 inches of the weld, the temperature at that point then being so low as to be hardly perceptible. That this is true is shown by the welding of insulated copper wires. The covering is removed, Fig. 73, for a distance just sufficient to admit the clamps. The remaining covering is not injured in the least. In welding wire cables, Figs. 71, 72 and 74, the wires are fused into a solid bar for about 1 inch and the hemp core charred for a like length.

The Current Harmless.

The point has been frequently brought up by those not conversant with the process that there is a certain amount of danger attending the handling of these machines. This is due mainly to the fact that it is supposed that a current of sufficient strength to bring a large section of steel to a white heat would naturally have sufficient power to create disagreeable results in the man who might be so placed as to permit any part of it to pass through him. The writer may state that he has placed his moistened fingers on the two copper clamps of an electric welding machine through which the current was passing in the act of welding 2 inch steel bars. It was impossible to note any effect whatever, as there was absolutely no sensation.

EXAMPLES OF WELDING.

The Machine at the Johnson Company.

One of the most recent successful applications of the electric welding process is carried on at the works of the Johnson Company, Johnstown, Pa., in the making of rail chairs. A perspective view of this machine and also views of the two parts composing the chair, and also the completed chair, are shown on our front page. The transformer used in this machine we have already described. It therefore only remains to mention the general construction of the apparatus and the work it is intended to perform. This machine is used in welding what we may term the rail clamp to the top of the rail chair proper, the shapes of both of these being clearly outlined in the drawing. In the upper left-hand corner of the machine is a hydraulic cylinder, the piston rod of which is arranged so as to operate an elbow lever, the right hand arm of which, when the plunger moves forward, presses upon and firmly holds the body of the rail chair. The cylinder and the lever it operates are mounted upon a sliding base similar in many respects to the platen of a planer, which is arranged to be moved forward by means of the two hydraulic cylinders shown at the left. These cylinders are 8 inches in diameter and have a stroke of about 2 inches, and are adapted to give a pressure of about an average of 1800 pounds to the square inch of welding section, which in this case is about 4 square inches. The cylinder shown at the top and to the right is adapted to hold the rail clamp in position during the operation of welding, and also to resist the pressure brought to bear by the operating cylinders. The practical operation of welding is, of course, similar to that we have already described. It has been found that with the aid of this machine rail chairs can be economically produced, and that the integrity of the weld can be relied upon implicitly.

We have endeavored to arrange the small drawings representing what has been done in electric welding in a practical way up to date, in groups according to the shape and material operated upon, without any reference to the application of the process to any particular industry. Fig. 15 shows a bar or standard welded to the center of a disk. Fig. 16 is similar to Fig. 14, and is intended to show that the line of demarkation separating the two pieces welded is absolutely imperceivable unless, as stated before, the plain surface is first polished and then treated with acid. Fig. 17 shows an electric weld which has been hammered down, the edge and flat view of the welded portion being represented. This is intended to illustrate the perfect continuity at the point of welding. Fig. 18 represents a bar which has been welded straight and then curved at the weld. Figs. 19, 20, 21, 22, 27, 28, 33 and 34 represent various applications of electric welding in straight and bar work, and where, as in the case of the drill, Fig. 20, the rock drill, Fig. 19, and the pick, Fig. 34, it is essential to make the cutting point of tool steel and the shank of softer metal. Figs. 26, 29, 30, 31 and 32 show the welding of different shapes. Fig. 23 shows two bars which have been welded to the end of one bar. Fig. 25 representing the same shape, but with the legs spread. Fig. 24 is the same construction except that three bars have been welded to the end of one. Fig. 35 is an anchor made by the welding process, there being, as indicated by the letter W, five welds.

In the drawings Figs. 36 to 42, inclusive, we come to another branch of electric welding, which consists in adding to a body of soft material a short length of hard steel, the additional portion being represented in each case by the letter A. In the case of the hammer, for instance, Fig. 36, the body is first formed and then material for the two heads is added from a bar of steel by an electric weld, the proper lengths being afterwards cut off. In the same way the axe blade, Fig. 38, the trammel point, Fig. 40, the plum bob point, Fig. 41, the lathe tool, Fig. 37, the hatchet blade and head, Fig. 39, and the dog clamp, Fig. 42, being provided in a similar fashion.

Figs. 44 to 46 represent where the electric welding process has come into the manufacture of bicycles. Fig. 45 is a drawing of the U-shaped bicycle tire, showing the weld. In this work it has been found that the operation of welding can be performed more expeditiously, more economically and with far greater success than with any other known method. In this it is particularly true that during the operation of welding, the operator not only knows whether he will make a successful joint or not, but he is also informed, as we might say, of the nature of the material during the work, and is therefore in a position to act in a certain sense as an inspector. Fig. 44 shows where the tire has been bent at the weld, and is intended merely as an illustration of the perfect condition of the pieces at the point. The standard carrying the seat in some bicycles consists of a tube in the upper part of which is held a spring frame carrying the seat. This is shown in Fig. 46, where the parts are ready for brazing.

We may here state that brazing operations are carried on by aid of the electric current in a far more advantageous way than with the ordinary furnace. The work being prepared, as shown in the drawing, a few turns of thin wire are wrapped around the entering bar, then the whole thing is placed in the welding machine, the result being that the wire melts, flows down and effectually seals the joint. In the ordinary way where a flux is used the work for a considerable distance each side of the joint is tarnished, and more or less time is therefore necessary in order to clean it. With the electric process the joint is kept clean, and there is little work to be done after the brazing has been perfected.

Figs. 47 to 55 represent the position now occupied by electric welding in carriage work. It is in this industry that the method has been found to be peculiarly valuable, since the material, form and dimensions of the iron work entering a wagon lend themselves readily to the process Beginning at Fig. 48, these drawings show the weld in, first, the dashboard frame, clip king bolt, fifth wheel, axle, spring bed, clip, double perch frame, carriage step and seat frame. In making the axle spring bed, Fig. 51, the two pieces *a b* are welded to the side of the axle.

The method of making a metal wheel by the welding process is shown in Figs. 56 and 57. The hub and the two rings *c c* are shaped as indicated in Fig. 57, the spokes being entered in the recesses provided for them, as indicated by dotted lines. The hub is then clamped in the welder, the resulting wheel being shown in Fig. 56. This method increases the strength and durability of the wheel, and at the same time makes possible the employment of lighter material.

Upsetting a collar on an axle or similar bar is shown in Figs. 58 to 60. The separate parts are first arranged as shown in Fig. 60. The current is then passed through the bars, which are forced together, the result being as represented in the section, Fig. 58, and the side view, Fig. 59. The old and new telegraph wire splice is represented in Fig. 61. The welding of a shape of peculiar section is represented in Fig. 62. The ends of two bars of rectangular section welded to the cylindrical piece is shown in Fig. 63. One of the most difficult operations to perform successfully by any method of welding is that of uniting wide flat strips of thin metal. This is shown in Fig. 64, the drawing of which was made from a piece $\frac{3}{64}$ inch thick and $1\frac{1}{2}$ inches wide.

Pipe welding is shown in Figs. 66 to 70, Fig 67 representing a pipe which has been tested to rupture and shows that the break was stopped at the weld. Fig. 69 shows a return bend of cast iron, welded to lengths of wrought-iron pipe for refrigerator work. A peculiarity of the welding of pipes is the fact that the burr is only on the outside of the pipe, the tendency, when the metal has been heated and then pressed together, being to force the surplus metal outward. Provision has been made for removing the outside burr by means of a pneumatic hammer. A practical application of pipe welding by electricity has been made in the making of coils of very long lengths of pipe. In this method the welder is carried upon a car, during the movement of which forward a new length of pipe is welded to the preceding length. From the welder the pipe passes through a heating furnace and is heated to the proper temperature in order to be wound in a coil around the mandrel. Following the welder is a testing apparatus which tests the pipe after each joint has been made In this way pipes of any length can be made and the joint readily bent. Figs. 76 to 78 show the electric welding process applied to the manufacture of projectiles. In the first view the point A and the base C are welded to the cylindrical body B, the perfected shell being shown in Fig. 77. Another method of making the shell is shown in Fig. 78, the shell here consisting of but two parts.

Figs. 71 to 74 show the welding of wire cables, Fig. 75 showing where a piece has been welded to the end of a cable in order to prevent fraying. As we stated previously, the welding process converts

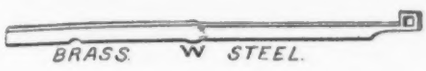


Fig. 90.—Typograph Lever.

Fig. 91.—Welding Different Metals.

Fig. 95.—Lead Plate for Storage Battery.

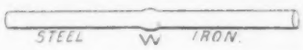


Fig. 92.

Fig. 94.

Fig. 93.—Bar Broken, but not at Weld.

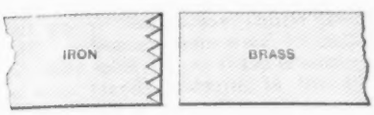


Fig. 96.—Mechanical Joint and Electric Weld.

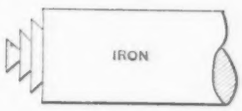


Fig. 97.—Form of Iron End.

Fig. 98.—Section Showing Weld and Joint.

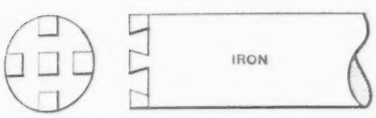


Fig. 99.—Another Form of Joint—Dovetail.

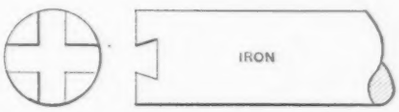


Fig. 100.—Dovetail Joint.

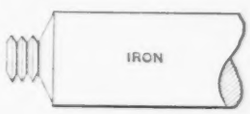


Fig. 101.—Threaded Joint.

Fig. 105.—Spiral from Machine, Fig. 104.

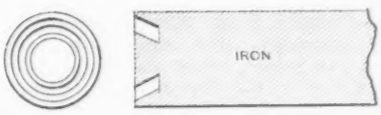


Fig. 102.—Ring Joint.

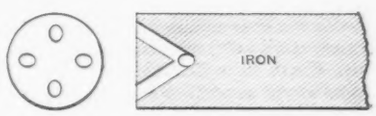


Fig. 103.—Another Form of Joint.

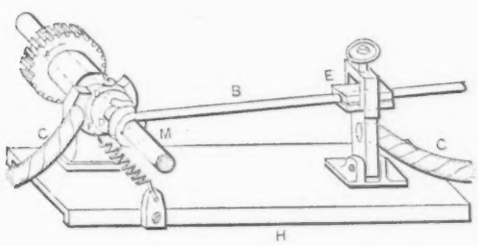


Fig. 104.—Electrically Heating and Coiling.

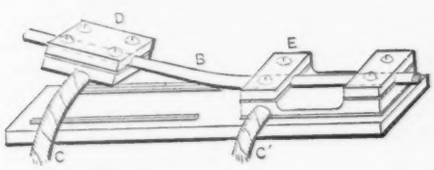


Fig. 108.—Electrically Heating and Bending.

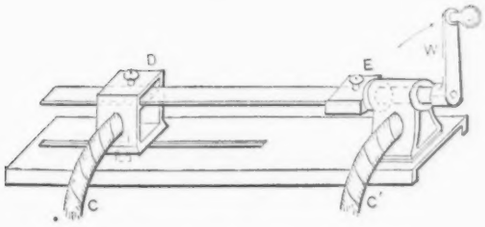


Fig. 106.—Electrically Heating and Twisting.

Fig. 110.—Shape made on Fig. 108.

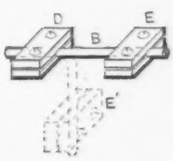


Fig. 109.—Second Step in Machine, Fig. 108.

Fig. 107.—Specimen of Twisted Metal.

Fig. 111.—Electrically Heated and Upset.

ELECTRIC METAL WORKING.

about 1 inch of the cable into solid metal, and if a hemp core be present, it chars it for a like distance. Figs. 79 to 82 represent chain and circular work, the points of welding being indicated. Fig. 83 shows one of the eyes of an eye bar. Fig. 88 represents a portion of a circular saw of large size, in which a new tooth has been placed by the electric process. Fig. 89 shows the welding of a couple of band saws, large and small sizes. The fifth wheel shown in Figs. 84 to 87 is formed of three parts, shown in the first three figures. The shell consists of two channel sections, Figs. 84 and 86, in which are held rollers, the completed wheel being as presented in Fig. 87.

The welding of different materials together is shown in Figs. 90 to 94. A difficult task, and one not possible with any other process, is the welding of storage battery plates of lead, as shown in Fig. 95.

A combination weld and mechanical joint is shown in Figs. 96 to 103. It will be noticed that the end of the iron bar is so formed that the brass bar to which it is intended to unite it will constitute a mechanical joint or dovetail after the ends have been brought together and subjected to the welding process. Several forms of making the dovetail are shown, Fig. 98 being a sectional view at the weld and being intended to show that the brass flows in so freely as to completely fill the grooves cut in the iron. In arranging these pieces for welding the clamps in the machine are so adjusted that the iron is first heated a short distance from its points of contact with the brass. The heat then follows by conduction along the iron and gradually increases the temperature of the abutting bar. After the brass bar has become heated thoroughly it begins to flow, and as the two parts are pressed together the metal flows down, fills the grooves cut on the iron end completely and makes a perfect mechanical joint, which is independent of the uniting of the two ends together by fusion. This joint, as explained and as shown in Fig. 93, possesses greater strength than the weaker metal of which it is composed. This method has been found of great convenience in the manufacture especially of reciprocating electric engines, where it is desirable to have a soft iron core of a specified length, to each end of which is welded a brass extension which serves as a guide.

The heating and bending of metals and their upsetting are represented in the remaining figures, Figs. 105 to 111. In the machine shown in Fig. 104 the metal to be coiled is placed in the clamp E and attached to the mandrel M, the current passing through the conductors C C. After having been heated to the proper degree, the mandrel is turned, the result being a coil, as shown in Fig. 105. Fig. 106 is practically the same arrangement, except that the clamp E is provided with a handle by which it may be turned in order, after the strip has been heated, to form the twisted shape shown in Fig. 107. Bending of the bar B after it has been heated is shown in Fig. 108, where the clamp D is movable, the second operation after the bar B has been bent to a right angle being shown in Fig. 109, the result being shown in Fig. 110. Fig. 111 represents a bar which has been heated and then upset.

Conclusion.

What we have said as to the practical application of the electric welding process serves only to indicate what has been done in a practical way up to the present time. We have merely selected those specimens which we thought would be in a certain sense typical. The many and varied modifications we did not think it necessary to mention in detail. We feel convinced that from what has been presented the mechanic may be able not only to do welding operations more conveniently and economically by the electric process, but he may also be given some hints which will enable him to make shapes which are difficult and perhaps impossible with any other method.

The Whitehead Torpedo in Brooklyn.

A good deal of error has crept into the announcements made in the newspapers lately concerning the work which the E. W. Bliss Company, Limited, and an associated enterprise, the United States Projectile Company of Brooklyn, N. Y., are doing for the Government. A representative of *The Iron Age* gathered the following data in conversation with E. W. Bliss, who is the guiding spirit in the enterprises referred to: The E. W. Bliss Company, Limited, have a contract with the Navy Department to furnish 100 Whitehead torpedoes, they having the right to manufacture them for the Government under the patents. In the large new shop, which has just been completed, the work of building the torpedoes is going forward rapidly, day and night, a good many of the parts being ready and completed. The first test of the air chamber of the torpedo was made last week, in the presence of the Torpedo Board and of Lieutenant Meigs of the Bethlehem Iron Company, who have been furnishing the steel tubing for the air chambers, the test being perfectly satisfactory. The heads of the chambers are made of Park steel, the flanging work being done by the United States Projectile Company. The water test of the torpedo proper will soon be made at Bay Ridge, adjoining the property of Mr. Bliss. Some of the fine drop forging work for parts of the torpedo are being made by Billings & Spencer of Hartford, the finishing work being done by the E. W. Bliss Company, Limited.

The United States Projectile Company, of which E. W. Bliss is president, have works situated at the foot of Fifty-third street, Brooklyn. The company have a contract to furnish 18,000 shells of different calibers to the Government. These shells are made from special steel billets, produced by the Troy Steel and Iron Company. They are heated and drawn through dies, by the use of hydraulic presses made by the E. W. Bliss Company, Limited. The process used is the Cayley-Courtenay process, which is the development of the Simonds rolling mill process for this special work. A large plant in Great Britain has been established and is manufacturing on a comprehensive scale. The works of the United States Projectile Company have just completed 1500 shells and are now turning them out at the rate of 300 per day. It will be readily understood that a shell so made is free from defects likely to occur in cast-steel or cast-iron shells heretofore used, and that the character of the work put on them is such as to lead to the rejection of any material not capable of resisting severe tests. The specifications of the Government call for ability to resist an internal water pressure of 200 pounds per square inch without leading to leakage, and tests of specimens must, on 2-inch sizes, exhibit a tensile strength of at least 70,000 pounds. We may state that the United States Projectile Company propose to do all kinds of hydraulic forging work for the general market, the plant affording exceptional facilities for that purpose.

Cruiser No. 11, building at Loring's South Boston shipyard, will probably be launched about May 1. She will be exactly like the Montgomery and Detroit, which are in the water at the Columbia Iron Works' shipyards at Baltimore, and will closely resemble the Yorktown.

WORLD'S FAIR NOTES.

An Important Conflict Settled.

The conflict of authority between Director-General Davis, representing the National Commission, and President Baker of the local Board of Directors, has been settled in favor of the former. Director-General Davis will be allowed to install exhibits as he may see fit in the World's Fair buildings. This was agreed upon at a special conference on Thursday night between the Director-General and the Committee on Rules and Regulations of the Board of Directors. Those present at the meeting were President Baker, J. J. P. Odell, W. D. Kerfoot, E. P. Ripley and Director-General Davis. The conference ended in entire harmony.

This controversy was not a trifling matter by any means, but was regarded with much concern by everybody having the best interests of the enterprise at heart. The members of the Chicago City Council were so stirred up over it that they adopted formal resolutions urging the adoption of harmonious measures. The suggestion is heard on all sides that the local board of directors should elect as their president at the next annual meeting this spring the Director-General of the fair. This would avoid all possible chance of future annoying clashes of authority.

The conclusion of the vexed question is held to be such as to give intending exhibitors the unqualified assurance that in sending exhibits to the World's Fair they will deal exclusively with the Director-General as the officer of the National Government, and have their articles installed by him, and not by officers of the Chicago directory. As a result the following rules will be printed and sent broadcast:

Rule 1. Exhibitors will not be charged for space. A limited amount of power will be supplied gratuitously. This amount will be settled definitely at the time space is allotted. Power in excess of that allowed gratuitously will be furnished by the exposition at a fixed price. Demands for such excess must be made before the allotment of space.

Rule 2. Any single piece or section of any exhibit of greater weight than 30,000 pounds will not be accepted if machinery is required for its installation.

Rule 3. Exhibitors must provide, at their own expense, all showcases, cabinets, shelving, counters, fittings, &c., which they may require, and all countershafts, pulleys, belting, &c., for the transmission of power from the main shafts.

Rule 4. Exhibitors will be confined to such exhibits as are specified in their application. When the allotment of space is definitely made exhibitors will be notified of their allotment of space and its location, and will be furnished with a permit to occupy the same, subject to the general rules and regulations adopted for the government of the exposition and the special rules governing the department in which their exhibit will be made. Permits for space will not be transferable.

Rule 5. Special rules will be issued governing each department, and the sale of articles within the buildings or on the grounds, but no articles shall be sold for removal previous to the close of the exposition unless a concession of privilege for the same has been granted by the Committee on Ways and Means. "Privileges" refer to the sale of such goods as are manufactured in order to illustrate a machine or process exhibited. "Concessions" refer to the sale of all goods and operation of attractions from which the securing of revenue is the sole object of the lessees. The removal of exhibits will not be permitted prior to the close of the exposition.

Rule 6. Decorations, signs, dimensions of cabinets, shelving, counters, &c., and the arrangement of exhibits must conform to the general plan adopted by the Director-General.

Rule 7. Reasonable precautions will be taken for the preservation of exhibits, but the World's Columbian Exposition will not be responsible for any damage to, or for the loss or destruction of, an exhibit, resulting from any cause.

Rule 8. All packages containing exhibits intended for the several departments must be addressed to the "Director-General, World's Columbian Exposition, Chicago, Ill., U. S. A." In addition, the following information must be written on the outside of each package:

(*a*) Department in which exhibit is to be installed.

(*b*) The State or Territory from which the package comes.

(*c*) The name and address of the exhibitor.

(*d*) The number of the permit for space.

(*e*) The total number of packages sent by the same exhibitor. The serial number must be marked on each package and a list of the contents inclosed in each package. Freight must be prepaid.

Rule 9. Favorable terms will be arranged by which exhibitors may insure their own goods. Exhibitors may employ watchmen of their own choice to guard their goods during the hours the exposition is open to the public. Such watchmen will be subject to the rules and regulations governing employees of the exposition, but no exhibitors will be permitted to employ attendants or assistants for service in any building except upon written consent of the chief of the department.

Rule 10. The expense of transporting, receiving, unpacking and arranging exhibits, as well as their removal at the close of the exposition, shall be paid by the exhibitor.

Rule 11. If no authorized person is at hand to take charge of exhibits within a reasonable time after arrival at the exposition buildings, they will be removed and stored at the cost and risk of whosoever it may concern.

Rule 12. The installation of heavy articles requiring foundations should, by special arrangement with the Chief of Construction, begin as soon as the progress of the work on the buildings will permit. The general reception of articles at the exposition buildings will commence November 1, 1892, and no articles will be admitted after April 10, 1893. Space not taken possession of April 1, 1893, will revert to the Director-General for reassignment.

Rule 13. If exhibits are intended for competition it must be so stated by the exhibitor, or they will be excluded from examination for award.

Rule 14. The chief of each department will provide cards of uniform size and character, which may be affixed to exhibits, and on which will be stated only the exhibitor's name and address, the name of the object or article exhibited, and its catalogue number.

Rule 15. Articles that are in any way dangerous or offensive, also patent medicines, nostrums, and empirical preparations whose ingredients are concealed, will not be admitted to the exposition.

Rule 16. Exhibitors' business cards and brief descriptive circulars only may be placed within such exhibitor's space for distribution. The right is reserved by the Director-General to restrict or discontinue this privilege whenever it is carried to excess or becomes an annoyance to visitors.

Rule 17. The chief of each department, with the approval of the Director-General, has the power to order the removal of any article he may consider dangerous, detrimental to, or incompatible with the object or decorum of the exposition or the comfort or safety of the public.

Rule 18. Exhibitors will be held responsible for the cleanliness of their exhibits and the space surrounding the same. All exhibits must be in complete order each day at least 30 minutes before the hour of opening. No work of this character will be permitted during the hours the building is open to the public. In case of failure on the part of any exhibitor to observe this rule the chief of the department may adopt such means to enforce the same as circumstances may suggest.

Rule 19. Sketches, drawings, photographs or other reproductions of articles exhibited will only be allowed upon the joint assent of the exhibitor and the Director-General; but general views of portions of the interiors of the buildings may be made on the approval of the Committee on Ways and Means.

Rule 20. Immediately after the close of exposition exhibitors must remove their effects and complete such removal before January 1, 1894. Goods then remaining will be removed and disposed of under the direction of the World's Columbian Exposition.

Rule 21. An official catalogue will be published in English, French, German and Spanish. The sale of catalogues is reserved exclusively by the exposition company.

Rule 22. Each person who becomes an exhibitor thereby agrees to conform strictly to the rules and regulations established for the government of the exposition.

Rule 23. Communications concerning applications for space, and negotiations relative thereto, should be addressed to the "Director-General World's Columbian Exposition, Chicago, Ill., U. S. A."

Rule 24. The management reserves the right to construe, amend or add to all rules and regulations whenever it may be deemed necessary for the interest of the exposition.

Trade Opportunities in Paraguay.—A special letter from the Government of Paraguay, accompanying the last statistical review, says in relation to the commerce of the country: "Foreign trade is with us almost unknown, excepting such transactions as we make with Brazil, Uruguay and the Argentine. A profitable commerce could be built up between our country and the foreign markets if merchants would establish branch houses or agencies in our cities, and trade in our products, for goods sent direct from the countries in which they were originally manufactured. These exchanges are now adjusted through the markets at the seaports of the neighboring countries, but would be much more profitable if more direct. Transactions could be made in this way, as the merchants of Paraguay do not have to pay duties to the Argentine on foreign goods passing through that country. Foreigners are most favorably received in this country, especially those who come to develop its resources or to make business arrangements that will increase its commerce."

The annual meeting of the members of the Western Pennsylvania Engineers' Society was held in Pittsburgh on Tuesday evening, the 19th inst. Col. T. P. Roberts, the retiring president in his address congratulated the society on its progress during the year. He said that in the past the society has been one of the leading organizations in the country in matters of public interest in which engineering was a feature, and he hoped it would continue to occupy that position. He said young engineers should be educated in more ways than one; their education should not be confined to merely technical matters. Secretary Harlowe reported that there were on the rolls 370 active members, and during the year ten papers were read before the society and published. The following officers were elected for the ensuing year: Alfred E. Hunt, president; vice-president for one year Phineas Barnes, and for two years Charles Davis; A. E. Frost treasurer, and R. N. Clark secretary. Robert Monroe and G. W. G. Ferris were elected directors. At the conclusion of the business a discussion ensued to bring the society into more prominent notice. At its conclusion a motion was made and adopted empowering the secretary to send copies of the proceedings and papers read at the meetings to all the technical journals, and to exchange with such other societies throughout the world as he may see fit. The paper to be read at the next meeting of the society will be presented by William Metcalf of the Cresent Steel Company on the subject of "Smoke," a topic which is at present interesting to the people of Pittsburgh.

The National Board of Trade.

Through the courtesy of Col. John A. Price, Scranton, Pa., Chairman of the Committee on Extension and Representation of the National Board of Trade, we have a copy of the Official Programme of Recommendations and Resolutions to be considered at the annual meeting of the organization, to be held in Washington on Wednesday, January 27, and days following. The programme is unique in the matter of arrangement. There are two narrow columns on each page devoted respectively to subjects and number of Chamber proposing the same, and then in a wide column are printed the recommendations and resolutions. No less than 49 topics are listed, including everything from a national clearing house for banks to the extension of the term of the President of the United States to six years, and the making of the incumbent ineligible as a candidate for the next succeeding term. The first of these form the report of the Executive Council and the last one mentioned is proposed by the Rochester Chamber of Commerce. We learn that there are 1400 local bodies affiliated with the National Board of Trade, and it is evident that some of the bodies have failed to supply either a recommendation or a resolution for discussion at the coming meeting, since there are, comparatively speaking, so few, and besides some of the boards of trade, as, for example, the Chicago board, are on record with several recommendations each. Uniformity of Commercial Laws, Market Reports, Stations for Testing Building Materials, the Torrey Bankruptcy Bill, a Uniform Bill of Lading, Regulation of Immigration, Improvement of the Great Lakes, the Mississippi River, Improvement of Country Roads, National Bank Laws, Silver Coinage, Reduction of Letter Postage, Cheaper Telegraphy, Federal Supervision of Insurance, Consolidation of Third and Fourth Class Mail Matter, and the Permanent Census are some of the more important subjects mentioned. An effort, we understand, is being made by this association to bring the industrial and commercial interests of the country into line of patriotic duty on all the great national questions of the day. We are informed that what the organization has already done in the direction of the permanent census has "told wonderfully."

Walrand claims to be in a position to work the baby Bessemer successfully, with the aid of a knack which he declines to divulge. Otto Vogel, a German expert, believes that he adds ferrosilicon, ferro aluminum or aluminum.

One-Hundred Ton Electric Traveling Cranes.

BY C. J. BATES.

[*With Supplement.*]

The use of electricity as a motive power for cranes is attracting much attention on account of its facility of application, range of power and speed, and delicacy of touch, if we may use the expression. The last is of great importance where very gentle movement of heavy masses is necessary, as in the foundry, where heretofore only hand-power cranes were considered practicable.

In the following the writer endeavors to convey a general description; but special reference is made, where particulars are necessary, to the 100-ton cranes built for the Baldwin Locomotive Works, by Messrs. Wm. Sellers & Co. Such description is made as complete as possible without reference to detail drawings.

Generally speaking, the crane consists of a bridge composed of two parallel girders supported at each end on tracks, on which it can be made to move from point to point as may be desired. The hoisting trolleys, which are carriages containing the drum with necessary gearing, are supported on rails that rest on the lower flanges of the girders. As it is impossible to use lower lateral bracing, owing to the necessity for clear space, the tendency of the trolleys to produce an outward thrust of the lower flanges of the girders is met by braces that extend from these lower flanges to the top cross struts, which extend beyond the girders for that purpose, as shown in the cut. In addition to the above top lateral struts are angle iron lateral braces of the usual form. The only vertical stiffening is from the outside braces mentioned.

The girders are designed to support the greatest load that may come on them from any position of the trolleys, with special reference to stiffness. The engraving shows the number of stiffeners used on the web. The ratio of depth to span of girder varies for different conditions of location. In the Baldwin shop the span of the bridge between centers of supporting rails is 74 feet 8 inches, and the girders are 7 feet deep, out to out of flanges. From center to center of webs the girders are placed 9 feet 3 inches apart. The bridge is carried by four 5-foot wheels, with double flanged steel tires, which run on the supporting rails mentioned, with a wheel base of about 14 feet. The rails were made especially for this case, and weigh 360 pounds per yard, being 6 inches high, with 4-inch tread, 6-inch base and 1 inch web. Securely bolted to the rail and runway is a rack, 2½-inch pitch and 4-inch face, into which the driving gears are meshed.

Ordinarily where the objects to be lifted are not too bulky to be supported at one point, one hoisting trolley may be used on the bridge. But in this case, where the lifting of such a mass as a locomotive requires it to be raised at both ends simultaneously, it is necessary to use two trolleys, which run on the rails supported by the lower flanges of the girders. The hoisting trolleys are, each in itself, complete hoisting machines, to which power may be applied without reference to its source.

In the cases considered the immediate source of power is the dynamo. From the dynamo the electric current is conducted to two $\frac{7}{16}$-inch copper rods, supported by yellow pine strips, which are insulated by glass. On these rods run two four-wheeled trolleys of the Wheeler type. It is thought by the makers that wire cables are better than the rods, as the latter are inclined to buckle under expansion, while the cable could sag between supports, to which there is no objection. It is also suggested that the current be supplied to the rod or cable at various points, instead of being carried by it all from one end.

The Wheeler trolleys are each connected to a 40 horse-power United States Electric Light Company's motor, shunt wound, constant speed, for 220-volt current. These two motors, running at 500 revolutions per minute, stand on the top of the bridge over the operator's platform and are belted to the systems of gearing below that operate the hoisting trolleys. The two systems, one for each trolley, are set one on each side of the bridge, and are connected by a belt across the bridge. The advantage of this connection is as yet an unsettled question, for in the event of one motor running at a higher speed than the other from any cause it might make the other motor act as a dynamo, throwing current back into the cable and probably result in burning the stronger motor. The cross belt is in use, however, in Baldwin's shop without deleterious effect.

The systems of gearing on each side, driven by the motors, consist essentially of a combination of gears, with clutches for stopping and starting and reversing, and for two changes of speed. These systems are connected with the hoisting trolleys by three square shafts to each trolley, running in movable hangers which allow the trolleys to pass them. These shafts operate the gearing for hoisting and lowering, for traversing the trolley, and a clutch for giving two changes of speed on the trolley. This gives on each trolley four changes of speed for hoisting or lowering, as follows: 5, 10, 20 and 40 feet per minute, and two changes of speed for traversing the trolley, of 50 and 100 feet per minute.

The two hoisting trolleys are entirely independent of each other. The driving shaft, across the top of the trolley, which is operated by one of the square shafts mentioned, is connected with the drums through an intermediate shaft by gears of two sizes, to either of which it may be connected by a clutch, giving the two speeds before mentioned. On the intermediate shaft is a special clutch that by its action holds the weight at any point until released by the driving power, either in raising or lowering, so there is no possibility of the apparatus lowering with a "run," when either changing direction or from one speed to another.

The drum is composed of two parts, mounted on the same shaft, one part keyed and one loose. Both parts are geared to the driving shaft and must run together. The object in making one loose on the shaft is to allow for any slight play and thus prevent straining. The cut shows the vertical lateral stiffening and drums, with hoisting blocks, other details omitted.

The hoisting block has two sheaves, as shown in the cut. The chains are in two parts, each wound on separate parts of the drum, the winding running toward the middle so there is no tendency to side pull either way, so the object lifted rises in a truly vertical line, a very important consideration in foundry work. The capacity of the hoisting trolleys is 100,000 pounds each, but it is not expected that the higher speeds will be used with any loads near the full capacity. On the "far trolley," so-called, is a separate drum and hoisting chain operated by a horse-power Wenstrom motor, series wound, variable speed, fed by a cable that hangs in festoons on the side of the bridge, as may be seen in the picture. This auxiliary drum is very useful in handling lighter weights when the large drums are engaged.

The arrangement for moving the crane, as a whole, is operated by the 40 horse-power motors, and is located on the far side of the bridge, as shown in the picture. This arrangement has two speeds, by which the crane may be traversed at 100 or 200 feet per minute. On the operator's platforms are nine levers; six of these are for the hoisting trolleys, *i. e.*, two for hoisting or lowering; two for traversing and two for change of speed; the three remaining levers are for stop, start and change of speed of traverse of the whole crane. The above levers are, as far as possible, arranged to move in the direction of the motion intended to be produced, so the first impulse of the operator's mind is in the right direction. The rheostat and switches are placed in a box at the side of the bridge.

Special remark should be made on the clutches in use on these cranes. The ordinary form of conical clutch consists of a conical piece, usually with a wood face, running in a metal flange of a corresponding shape, so that when pressed together friction on the conical surface holds them. In cranes with even as slow a motion as 5 feet per minute a very gentle start or stop is frequently of great importance. To accomplish this it is necessary to let the

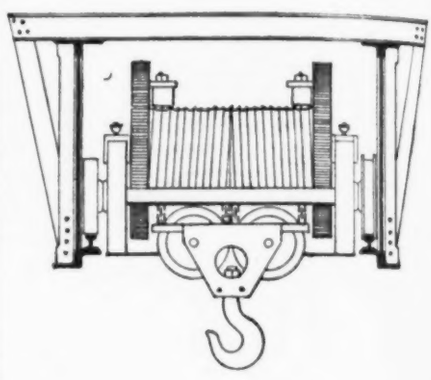


Fig. 2.—Drum of the Electric Crane.

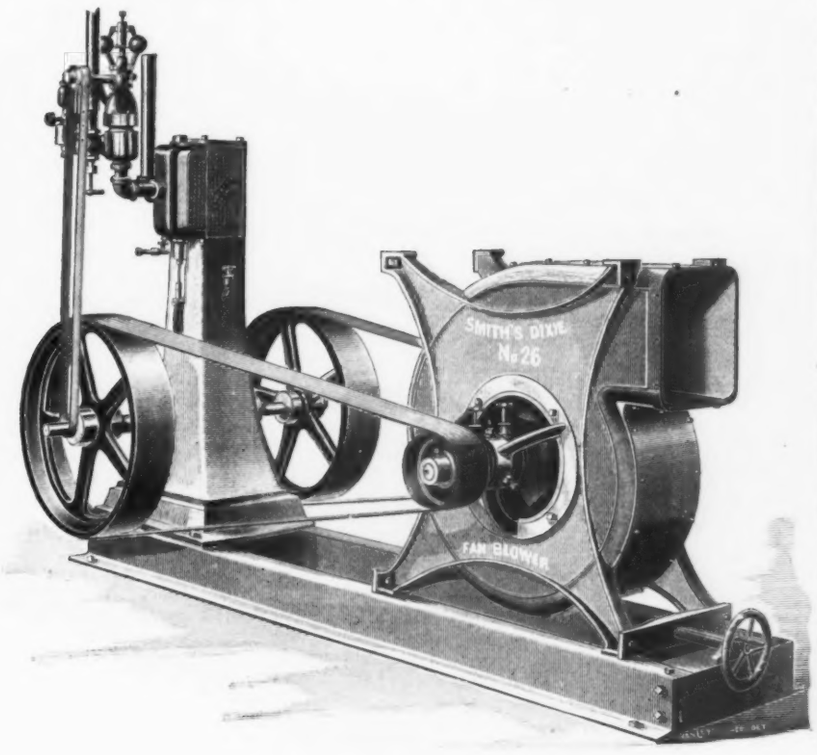
clutches slide a little before taking a firm hold, the pressure uniformly increasing until a firm hold is secured, as is done in the case of a cable car grip. It has been found that with a conical clutch the heat developed by the friction of first pressure and sliding caused the outer metal part to expand to an increased diameter, thus again loosening the clutch. This either checked the increasing speed of motion or even allowed a backward movement, that in handling delicate sand molds might result in serious consequences. This necessitated the designing of a clutch in which a change of shape within reasonable limits would not affect its holding power whether the parts were firmly bound and moving together, or whether one part produced a constantly accelerating or retarding effect no the other. This result has been very succesefully secured.

According to Wells, Fargo & Co.'s annual statement of the production of metals, the total product in 1891 of the States and Territories west of the Missouri River, including British Columbia, was $118,237,441, divided as follows; Gold, $31,975,994; silver, $60,614,004; copper, $13,261,663; lead, $12,385,780. For the States in 1891 California led in gold product, with $10,455,488; Colorado was second, with $4,647,322; Dakota third, with $3,196,838. In silver and base bullion Montana led, with $25,171,000; Colorado was second, with $23,555,715; Utah third, with $13,306,707. In total product for the year Colorado stood at the head, with $28,203,037; Montana second, with $28,011,000; Utah third, with $13,408,493, and California fourth, with $12,215,233.

The Dixie Fan Blower.

A combined Dixie blower, engine and base frame is being manufactured by the Huyett & Smith Mfg. Company of Detroit, Mich. It is used for furnishing the blast for cupolas, forge fires, heating furnaces, boilers, &c. It is belted up and shipped ready for steam connections and use, and is desirable where power cannot be readily obtained or spared from the factory shafting or engine, as the plant can readily be placed in the position most desired near to the work required of it. These engines have two band balance pulleys of extra strength which are belted direct to the blower. The base frame on which the engine and blower are fastened is constructed of wrought-iron angle beams securely bolted at the corners and with holes drilled for anchor bolts or lag screws.

The blower is of the Dixie pattern, with feet on all four quarters of its case, so that it can be placed to discharge in any direction, vertically or horizontally, and is secured to the base frame by gibbed ways. It is adjustable forward or back, by means of a screw to which the hand wheel, shown beneath the blower, is attached, thus permitting the use of endless belts, which may be tightened or slackened by turning the hand wheel.



THE DIXIE FAN BLOWER.

The annual report on the New York State canals shows that the whole number of tons of freight carried last season was 4,563,000 tons, which is a loss of 682,630 tons compared with the previous year. Superintendent Hannon says that while there has been a decrease in the total tonnage of the canals as compared with any one of the past seven years, or since the abolition of tolls, the canal has maintained its usefulness to a greater degree than at any other period in its recent history. Never before has such a violent and persistent war of rates existed between the trunk lines combined on the one side and the Erie Canal on the other. This competition was commenced upon the opening of the canal this year, and was continued during the entire season until its close, when the rates were immediately advanced to more than double what they had been during the season. The difference between the pool rates and the actual rates which have been charged by the railways, which is about 3¾ cents per bushel for transporting grain from Buffalo to New York, is the amount which has been saved to the consumer by the canal, without regard to the amount carried by the canals.

Different Methods of Tinning.

The following interesting letter on different methods of tinning is sent us by Hopkin Thomas, Cleveland, Ohio:

I receive a great many inquiries concerning the difference between the palm-oil tinning process, the acid-flux process and the old method of tinning, and with your permission I would like to make general answer and explanation of these methods through the columns of your paper. In the old method of tinning tin and terne plates five pots were required to do the work. 1. After the plates were pickled and washed in water and ready for tinning, the tinman would place them one by one in the first pot, which was filled about three-fourths full with palm oil, and he would put in this pot about 175 or 224 sheets of 14 x 20 plates, or twice as many 10 x 14 sheets. Next he would place them all in the tin pot, and after the plates had sunk down in the tin he would skim back the oil. The next step would be to take them out of the tin and give them to the washman, who would place them in the wash pot. The latter consisting of two pots. The washman would take about 20 sheets from the wash pot and brush and dip in the clean pot and place them one by one in the palm-oil pot, which had boiling palm oil in it. In this there was what we called a grate with pins so arranged as to keep the sheets separate in the oil. When the grate was full the boy would take them out one by one, and call out the number of pins, so that the washman would know the empty pins. The sheets would be placed in a rack separate, and as soon as the tin upon them had hardened another boy would take them one at a time and dip the edges in a little tin pot that had two iron bars so that the sheets would not go any deeper than ¼ inch. This pot was called the list pot and was used to take the tin off the edges of the sheet. After the plate had been dipped in the list pot the boy would strike it with a flat piece of wood. All the old method plates had a list on them. By this method plates would carry from 4 to 4½ pounds of tin on coke plates and 7 or 8 pounds on charcoal, while the terne plates would carry some 14 pounds of coating. The output by this method was 20 to 25 boxes a shift or turn.

Now, the demand for tin and terne plates increasing faster than the capacity to turn work out, necessity, as is often the case, became the mother of invention. At this stage of the trade two parties devised two patents for finishing tin and terne plates. One was the Cookley two-roll machine and the other the Morewood three roll machine. The two patents coming out together resulted in a lawsuit, which was compromised. A little later Morewood brought out an improvement on his machine, using five instead of three rolls. In both of these processes the plates were tinned the same as in the old method, the only difference being that they were finished through rolls that worked in boiling palm oil, these rolls doing away with the necessity of listing the plates. For a while after the processes came into use it was customary to put about 3½ pounds of tin on coke plates and about 6 pounds on charcoal and the output was a good deal more. Tin plate manufacturing was then a very profitable industry and people were going into the trade all the time. At last, as competition became keener, it was necessary to devise a plan to make plates still cheaper. Many methods were tried, such as Morewood's complete flux pot and round flux pot, and many others, but were all discarded before long. It was a well-known fact then that the shorter time the plates were left in the tin the less tin remained on them; also the slower the speed of the rolls in the palm oil the less tin there was on the plates. It must be borne in mind that the object sought after was a cheap charcoal plate. The following is the system adopted in Wales now with few exceptions. The first pot is the same as in the old method, holding the palm oil. The tin pot is somewhat smaller, so that only 20 or 25 coke plates are tinned at a time, the plates not being kept long in the pot. After the 20 sheets are tinned the tinman raises them out and places them in what we call a soaking pot, which answers the purpose of the wash pot in the old method. After this the plates are worked through the rolls as in the other method. With this plan they have succeeded in coating coke plates with less than 2½ pounds of tin a box. In some instances, with two Morewood rolls in the palm-oil pot, they have brought the coating under 2¼ pounds per box. When I refer to 2¼ pounds of tin I mean that is the total amount, including waste and everything. Even this did not satisfy all the manufacturers, and if we can believe them, they can coat plates with less than that amount, the Edwards' machine, it is said, saving ¼ pound of tin per box, which would bring the coating down to 1¾ pounds of tin, including waste. The Edwards machine has only one pot, the tin pot and the palm-oil pot being in one. Morewood's rolls are used in the palm-oil pot, but acid flux is used instead of palm oil to do the tinning with. With a few exceptions two rolls are used in making terne plates.

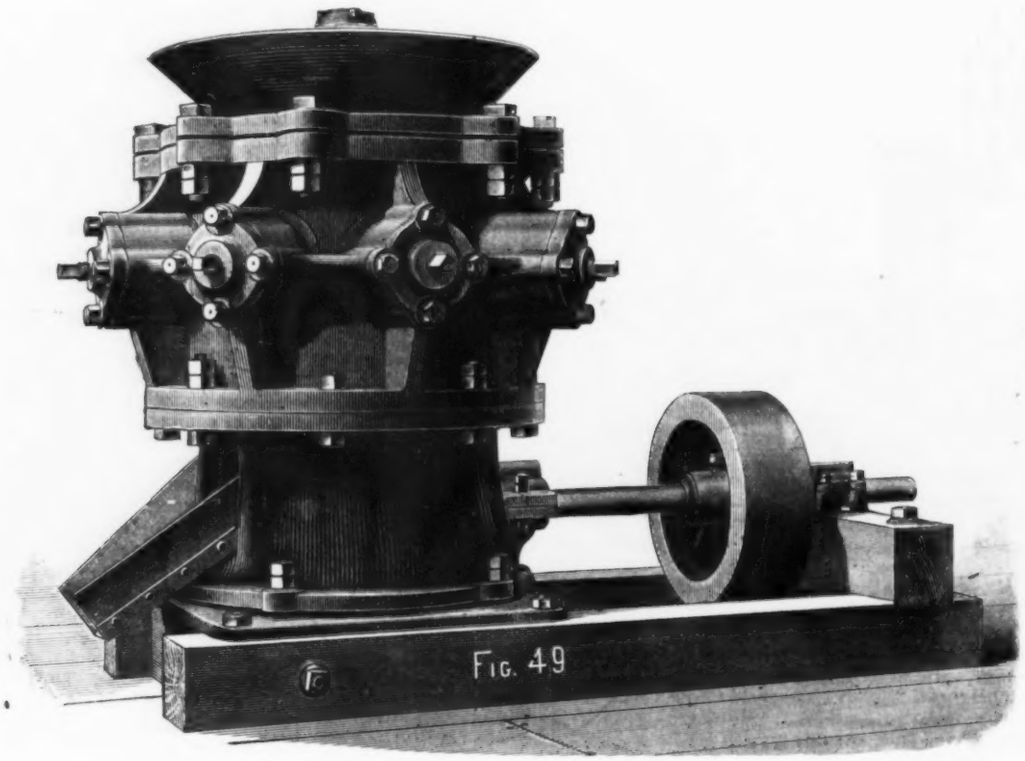
The Cramps Company, shipbuilders, will commence building at once a 2-story gun factory in Philadelphia.

The Gates New Model Spring Crusher.

The crusher shown in the engraving is a modification of the standard form of Gates rock and ore breaker made by the Gates Iron Works of 50 South Clinton street, Chicago, Ill. It has been designed to do much finer work than can be done on any other form. For many kinds of ore it will answer the purpose not only of a crusher, but of rolls as well. In this machine is introduced a movable or reciprocating concave which allows the vibrating crushing cone to come in close contact with it, without danger of undue strain to any of the crushing parts. The reciprocating portion of the concave or liner is made in a solid ring smaller than the inside diameter of the shell, or outside casing. This is done to allow the concave to yield slightly to the motion of the cone or crushing head. The necessary resistance to crush the material as the head vibrates is afforded by eight powerful springs which project through the outside casing or shell and meet the movable concave, forming a resistance or backing of many tons. This resistance can be increased or diminished by setting up the screws which compress the springs, and which is done from the outside.

These concaves are only two in number; they are a turned fit and drop into place without requiring further adjustment. The lower concave, where the greatest amount of wear occurs, is reversible, thus giving double service at the point of greatest wear, and affording the longest possible life.

This crusher has three feed openings, and will receive ore 5 inches by 10 inches. It will reduce the hardest known ores at the rate of 2½ tons per hour, so that 98 per cent. of the product will pass a screen of ½ inch mesh, 60 per cent. will pass a ¼-inch screen; 25 per cent. will pass a 10 mesh screen; 15 per cent. will pass a 20-mesh screen; and 10 per cent. will pass a 30-mesh screen. These figures are based upon granite or trap rock. By screening the product and returning rejections for crushing, the capacity will be largely increased and the percentage of 10-mesh product also increased in a still greater proportion. When working to its full capacity the crusher does not require more than 10 horse-power.



THE GATES NEW MODEL SPRING CRUSHER.

The Neville Direct Process.

The Harriman Wrought Iron Company, of which Dr. E. K. Seguine is president, P. W. Levering is secretary and treasurer and W. H. Axford is manager, have now in operation at an old forge at Rockaway, N. J., the Neville direct process. The company in question originally built a furnace at Harriman, Tenn., and will soon, we understand, increase the plant there to 12 furnaces. As yet no exact data which will allow of correctly estimating the commercial status of the process are available, the experimental work thus far having apparently been confined to training furnace crews. The inventor is John Neville, a practical iron worker advanced in years. Substantially the furnace consists of three-door reverberatory, at the end of which, opposite the fire bridge, are two groups of three chambers, one above the other, through which the gases, after passing through the reverberatory furnace, sweep on their way to the stacks. The charge, about 700 pounds of ore, is charged into the top chambers, which Mr. Neville calls the roasting chambers. Thence it is dropped to the second chamber, from which the charge is in due season allowed to fall into the lowest chambers, the position of the orifices, of course, alternating between the forward and the back end of the chambers. The charge is then pushed into the reverberatory furnace proper, where it is thoroughly stirred, being at the same time transferred toward the fire bridge, where the iron is balled, the balls being shingled under a hammer. At Rockaway, Ogden ore is being used, mixed with 20 per cent. of Cumberland coal as the reducing agent. The furnace is fired with the same coal and a series of jets of steam are introduced above the fire bridge. The best time yet made in getting out a charge has been 1 hour 15 minutes, the charges, of course, following one another in succession as the upper chamber is cleared. It is claimed that the fuel consumption is about 1 ton of coal per ton of blooms. As we have already stated, no exact data are yet available to show how great the loss is, and it is somewhat mysteriously hinted that a part of the process is still a secret. The crew for the furnace is one puddler and four helpers, who are capable of producing in a ten-hour shift about 3000 pounds of blooms, at the rate of working thus far established.

The tunnel for turbine wheels at Niagara Falls is nearly finished. The cheapest water power in the United States is at Lockport, N. Y., $16 67 per horse-power per annum. The next cheapest is at Manayunk, in Pennsylvania, $56.60, while steam power costs from $39 to $175 per horse-power per annum. These calculations are made on a basis of 12 hours for a day's work. Counting this Niagara power at 24 hours for a day's work, it is calculated that Niagara River will give power for one-fourth the cheapest water power now possessed by any manufacturer.

The Interstate Commerce Commission, in an opinion delivered at Washington, 18th inst., by Commissioner Vecazey against the Chicago and Northwestern Railway, directs a severe blow at car-service associations. One rule of the association requires the payment of demurrage when cars are retained by shippers more than 48 hours. The commission ignores the existence of this rule by deciding that the defendant in refusing to switch two loaded cars to the connecting line for delivery unless he promised, in advance, to pay any demurrage charges that might be made, was unreasonable, notwithstanding the complainant had previously refused to pay demurrage charges

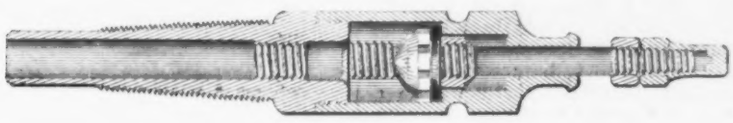
on other cars switched to his siding, which he had failed to fully unload within the time prescribed by the rule, and that the complainant is entitled to reparation for injuries sustained in consequence of such refusal.

Steam Gauge Cock.

The Schmedling gauge cock consists of a hollow barrel which is screwed into the boiler shell, and in which is a stem provided with a valve which is held to its seat by internal boiler pressure, and is inserted by forcing in the stem. The valve being thus inserted permits the escape of steam and water through an opening formed in the case beyond the valve seat. It will be noticed that the inner end of the valve stem is threaded in order to fit a threaded portion in the barrel, and to thereby close the opening. This having been done, the valve case proper can be removed for examination or repair. This valve is made by the Schmedling Gauge Cock Company of Rankin, Pa.

The Chicago Anti-Smoke Crusade.

The Chicago Society for the Prevention of Smoke has engaged Charles F. White of Dunkirk, N. Y., as consulting engineer. Mr. White is a graduate of the Worcester (Mass.) Polytechnic Institute, is a mechanical engineer of 15 years' experience, and was for six years superintendent of shops at the Manual Training School, St. Louis. For the last five years he has been a partner in the Dunkirk and New York Engineering Company.



STEAM GAUGE COCK.

An officer of the society thus outlines the course of procedure contemplated: "We shall begin operations in the center of the city by selecting the very worst offender against the smoke ordinance and send him an abatement notice. If he takes no notice we shall send a second. Should he still prove obdurate we shall send one of our inspectors, who will personally ask the reason for the non-abatement of the nuisance. Probably the offender will say that he cannot help the smoke—that he does not know how to avoid it.

"When he says he does not know how to stop the smoke we shall offer to give him —free of charge— the benefit of Engineer White's practical and expert advice. He will personally inspect the boilers and furnaces, and will advise as to the means necessary to prevent excessive smoke. Should an offender still refuse to make any alteration we shall prosecute him each and every day of his offending until he gets tired. The ordinance provides a fine of $50 for each offense, and we shall enforce it in every instance.

"Our inspectors will be practical men. Mr. White cannot do all the work. The inspectors will examine and advise on both boilers and furnaces, and when they are in doubt or fail, Mr White will be called in to give his opinion and advice. I may add that Mr. White is interested in nothing in the way of smoke prevention devices, and, indeed, has nothing to attend to in a business way except the work of this company."

We are in receipt of a fine photo-lithograph of the Masonic Temple of Chicago, accompanying which is a statement that Fraser & Chalmers of that city were contractors for the complete steam power, including two Fraser & Chalmers' Corliss engines of 500 horse power each, eight Scotch marine steel boilers of 125 horsepower each, together with all connecting line shafts, friction clutches, piping, flues, belting, tanks, receivers, pipe covering, foundations, &c. The total weight of the machinery was 325 tons. The following interesting particulars are given concerning this great building, which stands on the northeast corner of State and Randolph streets: Frontage on State street, 170 feet; frontage on Randolph street, 114 feet; hight of roof above street, 302 feet; number of full stories, 19; stories, including attics and promenade deck, 21; number of elevators, 17; carrying capacity daily, 50,000; number of electric lights, 7000; number of radiators, 1328; miles of steam piping, 11; miles of water and gas pipes, 24; tons of steel used in building proper, 4700; estimated cost of building, $4,500,000.

A New Steam Launch.

Charles L. Seabury & Co. of Nyack, N. Y., are building a steam launch of the following dimensions: Length, 42 feet; beam, 8 feet; draft, 3 feet; depth, 4 feet. The hull is built of selected white oak frames, straight grained, steam bent; stem post of hackmatac. White cedar planking is used, it being copper fastened and riveted to timbers throughout. The decks will be of white pine, laid in narrow strips "yacht style." All trimmings and interior finish will be of quartered oak. The seats are fitted as lockers for storage of boat furnishings, &c.

The entire cockpit will be covered with a stationary roof top of wood, with supporting stanchions on the sides, well fastened and braced. This top will be covered with canvas and painted, making it absolutely water-tight; also have storm curtains to roll down and button on the combing, inclosing the entire cockpit.

The machinery will consist of a Seabury design fore-and-aft compound engine and a Seabury patent safety water-tube boiler, which will drive the boat at a speed of at least 11 miles per hour.

This launch will be used by the Seawanhaka Corinthian Yacht Club at their new club house on Oyster Bay, and is for the transportation of the members and their friends to the club house from a point near the railroad station. It will also be used as judges' boat and for regatta committees on race days. The launch will have a seating capacity for about 25 to 30 people.

At the Watervliet Arsenal, West Troy, N. Y., the 8-inch guns will be ready in a short time. New machinery is constantly arriving. Harvey Beyea of the Rogers Locomotive Works, Paterson, N. J., arrived a few days since with the new locomotive built according to a special design for the arsenal. It is a six-wheel connection switch engine, weighing about 55 tons. The traction is increased by the concentration of its load upon the drivers, being fitted with a saddle back tank. The locomotive also has a specially devised steam break, supplemented by an improved screw brake of special pattern. Work on the roof of the south wing continues. The greater portion of the interior iron work has been completed.

THE WEEK.

Grain shipments from Chicago to the seaboard are being diverted by the New Orleans route. The statement for last week shows that the total tonnage of dead freight by all lines was 119,086 tons, against 144,545 tons for the preceding week, a drop of 25,459 tons.

The exports of Havana in 1891 declined considerably, particularly refined sugar and tobacco.

The Chignecto Marine Railway, 17 miles in length, designed to connect the Bay of Fundy and Northumberland Straits, is a financial failure, in the absence of aid either from England or the Canadian Government. About $3,500,000 has already been expended and about $1,500,000 is needed to finish the work.

English shipbuilders and shipowners are showing more than usual activity in establishing steamships lines to connect with South American ports on the Pacific. The United States Consul at Lima says that more than a dozen new steamers will enter the service to Peru within the coming year. The finest steamers on the Pacific Coast were brought out a year ago by the Pacific Steam Navigation Company, and two more now building at Belfast will be added the coming spring. A fourth independent English line between Liverpool and Peru has just commenced operations, besides which there are two German lines, a French line and others making irregular trips between Europe and the West Coast.

Secretary Noble urges that prompt and efficient measures be adopted by Congress for the preservation of American forests. He predicts that within the next 20 years the wisdom of preserving the forests of the West will be universally recognized.

Canada has been advised by the Imperial authorities that Canadian produce will be admitted into the West Indian Islands at the same rates as United States produce, or in other words, that the islands will not discriminate against the Dominion.

The new breakwater in Delaware Bay, for which plans have been prepared by the United States engineers, will afford shelter for an area of over 500 acres, and cost between $4,000,000 and $5,000,000.

The official report of the census of Barbadoes shows that the total population enumerated on the night of April 5 last was 182,306, being an increase since 1881 of 10,154, or 6.3 per cent.

The recent session of the New England Conference of Educational Workers in Boston was largely occupied by Superintendent Seaver of the Boston public schools and others participating in showing the great benefit to be derived from manual training.

The project of a ship canal from New York to Philadelphia and Delaware River is only the initial step in an enterprise of far-reaching importance. The idea is to make this canal the first link in a comprehensive interior waterway extending along the Atlantic seacoast as far south as Jacksonville and thence to the Gulf of Mexico, and thus establishing direct communication with New Orleans, Galveston and other ports. For a great part of the way inland channels, navigable or easily susceptible of being made so, already exist, and to convert these into a continuous waterway would not be a work of impracticable magnitude or cost.

Respecting the future demand for American wheat and the probable range of prices, one of the principal stockholders in the extensive mills at Fostoria, Ohio, in which Secretary Foster is also largely interested, remarks as follows: "Wheat

has declined 16 cents since harvesting, but this is no criterion that it will continue depressed. Five months of the 'grain year' has already elapsed and 150,000,000 bushels have been shipped to foreign ports, Antwerp receiving the bulk of this amount. There are yet seven months in which to dispose of the remainder, and Europe will take every grain of it, because it needs it. In 1890 every grain dealer was practically sold out, and very little will be reserved by farmers and speculators. In my 25 years of experience in the business I note the fact that wheat has been higher 16 times and lower nine times than at the present prices."

The Czar will purchase 15,000,000 roubles' worth of wheat from the specula tors in Moscow at a fair price or confiscate the amount required.

The freezing up of the crib in Lake Michigan, from which Chicago receives her water supply, was an unexpected occurence.

The recent Chilian war scare has brought into prominence the neccssity for maintaining stations at various points for naval vessels and the possibility of a seizure of the Chilian coaling station at Punta Arenas, in the Straits of Magellan, was hinted at. Negotiations said to be pending with Ecuador for the cession of the Galapagos Islands assume more importance, proportioned to the increase of the navy. With the completion of the Nicarauguan Canal, stations somewhere near the Isthmus, on either side, will be regarded as essential.

The incorporation at Portland, Maine, of the New York, New London and Norwich Transportation Company is regarded as a move on the part of the New York and New England to get a New York terminus, and it is supposed that the "transportation company" means big ferry boats upon which whole trains may be taken from New London, Conn., to Greenport, L. I., thence over the Long Island Railroad to Brooklyn.

The down-town "power station" or depot of the new Third Avenue cable road, now in course of construction, is located at the Bowery and Bayard street, and means nothing less than a nine-story building of brick and granite, to cost $650,000. Excavations to a depth of 40 feet below the street level are being made. There will be a chimney 20 feet wide at the base rising to a hight of 200 feet. The basement, 36 feet below the street, will be used for the power plant which operates the cables. On the west will be the shafting and drawing wheels and the engines for the power machines.

New Orleans exports of grain during the last 12 months in value amounted to $12,577,000, which is nearly double the total exports of the previous year. The largest gain was in December.

London engineers, after a thorough inquiry, have decided to build a tunnel under the Thames River at Blackwall, rather than construct a bridge at that point. The tunnel will be 27 feet in diameter and will take the heavy traffic from the docks to Greenwich and South London that now goes by the bridge. The work will be finished in three years, from the plans of Mr. Binnie, chief engineer to the County Council.

Commissioner Gilroy has obtained from George S. Lespinasse valuable data respecting the pavement system adopted in Paris, which may serve as a guide to future operations in New York. Paris expends upward of $3,000,000 per annum on her pavements, of which there are four kinds. Wooden blocks are removed after six years. Macadamized pavements are recommended where travel is not heavy, though they require much attention. The traffic of the city of Paris, while far greater than ours, is not so trying on the streets. Their wagon tires are wider, as a rule, and the traffic not as heavy.

There are at least two score of American-built steamships in the mercantile service which can make 14 or 15 miles an hour and fully come up to Government requirements for naval purposes. The best of them are in the Brazil and Venezuela lines and in the Pacific Mail.

A bill in Congress promises to secure easier rates of transportation on railroads than are allowed by the Interstate Commerce law.

A Wall street paper calculates that securities dealt in on the exchanges have depreciated $200,000,000 in market value in consequence of the Chilian war agitation.

The pernicious principle adopted by the overland railroads to California of paying the Pacific Mail a round sum per annum for not engaging in competitive freight warfare is condemned by the Pittsburgh *Dispatch*, which says: "The Pacific Mail subsidy, as paid by these railroads, is an example of the worst phase of the pooling policy. Instead of being paid to encourage a transportation company to do business, it is paid to hire it not to. It is, in the first instance, a bribe to a steamship company not to perform the services for which they are organized, so far as transportation between Atlantic and Pacific ports is concerned, in order that the railroads can impose their high charges on the traffic. But having started on that basis of using corporate funds to lessen the public service, it has grown beyond that. The Pacific Mail found out that it was a very nice thing to earn a steady revenue without incurring any expense, and the satisfactory results of that policy occur with especial force to some large stockholders in the steamship company who are also powerful in the Transcontinental Association." Our Pittsburgh contemporary calls the bonus paid "combination blackmail."

The principal rice merchant in New York addresses cotton planters at the South, urging the introduction of rice wherever the culture of cotton is reduced, as being the safest and most profitable of Southern crops; gross results, $40 to $75 per acre; cost of cultivation, $20 to $35; difference in outcome due to character of cultivation or season. The consumption of rice in this country is increas ing annually per capita, and at far greater ratio than production.

The Boston Chamber of Commerce, dedicated a few days ago, cost $600,000, and is one of the finest examples of architecture in the city. The prominent feature is the rounded front, built on a 40-foot radius and surmounted by a conical tower 75 feet in hight. The entire hight, from the sidewalk to the apex of the tower, is 170 feet. The structure contains seven stories and is built of a pinkish-gray granite. Below the Chamber, which occupies the third floor, are stores and offices.

The increasing volume of the foreign trade of Philadelphia, after a long period of decadence, is the subject of much congratulatory remark in that city. The total exports for 1891 were $42,989,155, against $36,478,554 in 1890, an increase of $6,510,601. The imports in 1891 were $62,438,393, an increase of $6,381,380 over those of 1890. The exports are larger than before for ten years, while the imports have doubled within the decade. Last week there were 32 transient steamers at Philadelphia, nearly all loading with grain. A special feature is the heavy export business connected with the Reading Railroad, they having no less than 29 steamers which have already sailed or are scheduled to sail under the orders of this road during the month of January. Another line of steamers will soon start between Philadelphia, Amsterdam and Rotterdam and still another to Havre, Hamburg and ports in the United Kingdom.

An Ottawa dispatch says the Dominion Government will accept Canadian Pacific Railroad Company tender for establishing a fast line service between Canada and England, thus giving that company a direct line of steam rail and water communication between Great Britain and China.

An official of the Pennsylvania Railroad is quoted as saying that a trial of the compound locomotives built by the Baldwin Works has proved so satisfactory that very likely hereafter all of the freight engines of this company will be of the compound type. The great advantage is the economy of fuel.

Chinamen and negroes make good customers. Of manufactured cottons exported last week, valued altogether at $137,000, China and Hayti each took $25,000.

It is given out by reliable authority that the Texas and Santa Fé Railroad will be extended into Mexico from El Paso, Texas, with terminus at Guaymas, on the Pacific Coast.

Algiers is the site chosen for the new Government dry dock on the Gulf of Mexico and the Mississippi River.

The Atchison Railroad Company, it is said, will expend $2,500,000 on new equipment.

PERSONAL.

W. G. Richards has resigned the superintendency of the works of the American Steel Wheel Company. Mr. Richards invented and perfected the processes by which solid cast steel car wheels have been made to fully withstand the severe test of fast passenger service.

Palmer C. Ricketts has been chosen a director of the Rensselaer Polytechnic Institute of Troy, N. Y., to succeed D. M. Greene, resigned. Mr. Ricketts was born in Elkton, Cecil County, Maine, in 1856, and graduated in 1875 from the Polytechnic Institute. He was immediately appointed assistant in mathematics and astronomy, and in 1884 received the appointment of the William Howard Hart Professorship of Rational and Technical Mechanics. Professor Ricketts is the engineer of the Troy Public Improvement Commission and consulting engineer of the Rome, Watertown and Ogdensburg Railroad. He is a member of Governor Flower's staff, having been selected as Chief of the Engineering Corps. He is vice-president of the Trojan Car Coupler Company, a Fellow of the American Association for the Advancement of Science and a member of the American Society of Civil Engineers.

A New Pumping Engine. — Bids were opened in Philadelphia last week for a 10,000,000 gallon pumping engine at the Roxborough Station. These bids were received: Holly Mfg. Company—1. 10,000,000-gallon engine, $84,950, to be finished in one year. 2. 6,500,000-gallon engine, $103,000, the whole to be completed in 16 months. George F. Blake Mfg. Company —1. 10,000,000-gallon, $50,000, finished July 1, 1892. Southwark Mfg. Company —1. 12,000,000 gallon, patent governors, $72,000. 2. 12,000,000-gallon, without governors, $71,000, both to be com pleted in 11 months. Henry R. Worthington—1. 10,000,000-gallon, $75,750. 2. 12,000,000-gallon, $78,000. 3. 60,000,000-gallon, $88,000, to be completed in ten months.

The Iron Age

New York, Thursday, January 28, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

The establishment of the Williams Printing Company, 496-502 Cherry street, New York, where *The Iron Age* is printed, was partially destroyed by fire last Wednesday night, when only a part of the edition had been printed. The fire started about midnight at the top of the building, and, though it was soon brought under control, the flames and the water combined wrecked the composing room, and the presses on the ground floor were stopped for a considerable time. Arrangements were immediately made for temporary quarters, but the entire establishment is not yet capable of doing its usual maximum of work.

Production of Pig Iron.

James M. Swank, general manager of the American Iron and Steel Association, has just issued his returns of pig-iron production for the second half of the year 1891, that completing the record for the past 12 months. The production in the second half was the greatest on record, having been 4,911,763 gross tons, which, with the 3,368,107 tons made in the first half, carries the total of the year to 8,279,870 gross tons, a decline as compared with 1890 of 922,833 tons. The important feature, however, which the figures reveal, and in which they corroborate the monthly reports of capacity issued by *The Iron Age*, is that the country has been for the past six months, and is now, producing iron at a rate closely approximating to 10,000,000 gross tons per annum. The figures show that the consumption has not approached that rate of output, since the stocks have increased from 442,055 gross tons to 596,333 gross tons, thus showing an accumulation of a little more than 150,000 tons. It is worthy of note, however, that the charcoal furnaces continue to exhibit a notable increase in the reserves piled up at the furnaces. The following small table shows in gross tons the stocks since June 30, 1891:

	June 30, 1891.	December 31, 1891.
Bituminous	140,652	258,678
Anthracite	134,724	124,369
Charcoal	166,679	213,286
Total	442,055	596,333

The principal increase in the production of pig iron during the second half of the year, as compared with the first, has been in coke iron, which has increased from 2,202,044 gross tons to 3,634,754 gross tons during the second half. This shows an increase of 1,432,710 gross tons, of which nearly one-half, or 716,355 gross tons, was due to an increase in the production of Bessemer pig. The falling off in the first half of the year was caused by the suspension of operations growing out of the coke strike in the Shenango and Mahoning valleys, in the Wheeling district and in Pittsburgh. The output of the charcoal, coke and anthracite furnaces was as follows, in net tons:

Production of Charcoal Pig Iron.

	First half.	Second half.	Total 1891.
Massachusetts	4,466	5,603	10,069
Connecticut	11,125	13,303	24,428
New York	3,962	7,681	11,643
Pennsylvania	5,484	6,335	11,819
Maryland	5,192	5,170	10,362
Virginia	2,179	1,445	3,624
North Carolina	19	504	523
Georgia	2,420	15,216	17,636
Alabama	37,250	50,094	87,344
Texas	8,465	12,437	20,902
Kentucky	1,371	2,424	3,795
Tennessee	21,414	29,829	51,243
Ohio	8,180	13,988	22,168
Michigan	113,376	125,346	238,722
Wisconsin	52,357	53 026	105,383
Missouri	9,102	7,026	16,128
Oregon	3,759	6,652	10,411
Total, 1891	290,091	356,109	646,200
Total, 1890	314,427	389,095	703,522

Production of Bituminous Coal and Coke Pig Iron.

New York	81,483	33,927	115,410
Pennsylvania	980,581	1,673,693	2,654,274
Maryland	44,800	83,044	127,844
Virginia	139,729	187,374	327,103
North Carolina	984	2,096	3,080
Georgia	17,981	20,224	38,205
Alabama	339,109	464,701	803,810
West Virginia	20,977	75,660	96,637
Kentucky	17,408	29,022	46,430
Tennessee	123,652	151,852	275,504
Ohio	436,933	700,114	1,137,047
Indiana	5,449	3,208	8,657
Illinois	204,816	544,690	749,506
Wisconsin	38,741	76,695	115,436
Minnesota		1,373	1,373
Missouri		16,608	16,608
Colorado	13,646	6,644	20,290
Total, 1891	2,466,289	4,070,925	6,537,214
Total, 1890	3,566,153	3,588,572	7,154,725

Production of Anthracite and Mixed Anthracite and Coke Pig Iron.

New York	76,350	149,522	225,872
New Jersey	66,592	36,997	103,589
Pennsylvania	872,958	887,622	1,760,580
Total, 1891	1,015,900	1,074,141	2,090,041
Total, 1890	1,227,195	1,221,586	2,448,781

As compared with former years, the South has well held its own, while Pennsylvania and Ohio have fallen off somewhat, owing to the coke strike, and Illinois and Wisconsin exhibit a slight decline. It is interesting to note that the production of spiegeleisen and ferromanganese has largely increased in the second half of 1891, the production then being 83,224 gross tons, as compared with 44,542 gross tons during the first half, making a total for the year of 127,766 gross tons, contrasted with 133,180 gross tons in 1890.

When the figures for the charcoal-iron industry are eliminated, since they deal with a trade special to itself, the balance of the iron trade proves that consumption has kept up wonderfully well. The production in the second half of coke and anthracite irons was 4,593,808 gross tons. The stock of both rose from 275,376 gross tons on June 30 to 383,048 gross tons on December 31, showing an apparent consumption of 4,486,136 tons. It is evident, therefore, that if the consumption increases but very little relatively in the near future, the supply in hand will be very closely balanced, in spite of the enormous current production. If it does not, there is no alternative but sharp restriction in the output.

Manufacturers Must Grow.

The pregnant remark is made by a prominent railroad journal that no great railroad system in this country is ever finished. No matter how extensive it may be, it is continually impelled to increase its mileage. The statement could be carried further by adding that no matter how prosperous it may be, it is continually impelled to make improvements to meet changing conditions. A heavy fund is needed for betterments, and the greater the system is the larger this fund must be in order to keep up the efficiency of every part to withstand the active competition of other lines. The same thing is true in manufacturing. No establishment is ever complete. In the nature of things it never will be. The possibilities of the future must always be taken into consideration by those who are grappling with the problems of the present with apparently their utmost energy. The institution which does not grow in this day and age is falling behind. Its competitors are taking trade which they should not be permitted to get.

This growth is not always the result of careful planning. It is sometimes forced on the managers of an establishment. We have in mind one of the greatest institutions in the country, which was started less than a generation since by an eminent engineer who had grown tired of handling large operations. He proposed to some of his friends a scheme for a small manufacturing plant which should be so well balanced in all its departments and turn out a product of such marked excellence that it would practically run itself. The works were started, but the plan, somehow, did not turn out as had been anticipated. Departments would overbalance each other, or commercial conditions would cause modifications to be made which had not been anticipated, and additions and enlargements were consequently made, until now the concern, which was to be an ideally small, but complete, establishment, is one of the biggest of its kind on earth. Its development of late years was undoubtedly in accordance with most elaborately considered plans, but its main growth was just as undoubtedly forced upon it. Instead of resisting the influence, however, the management recognized the logic of events and acted accordingly.

There are too many manufacturing establishments in existence to-day, whose name has been before the country for many years, that are afflicted with dry rot. Their business has latterly shown no gain, and their plants have not been renewed to keep pace with the developments of the times. Their managers have no special plans for the future, and will not be forced by the pressure of the present to introduce any modifications. They are being hemmed in by active competitors on every side

and their manifest destiny is extinction. The blame may be laid on locality, on lack of natural advantage, on adverse legislation or on unscrupulous rivalry, but the true reason will very probably be found on investigation to be too close continuance to old lines in the management of the business.

The Springer Boiler Explosion.

The coroner's jury charged with the duty of investigating the frightful boiler explosion at Chicago on the 8th inst. have found that it was caused by gross criminal carelessness and negligence. Warren Springer, the owner of the establishment, and his superintendent, engineer, head fireman and water tender have been put under heavy bail to answer the accusation. It appears, from the evidence adduced at the inquest held on the bodies of the victims of the sad accident, that stable refuse mixed with coal was used for fuel, that the boilers had been repaired in a slovenly manner, and that the requirements of the city ordinances regarding boiler inspection had not been complied with. A grand jury will next investigate the matter, and the course of justice afterward will determine how criminal the negligence of the accused parties has been.

This specific case is of considerable importance to the persons immediately interested, but it is completely overshadowed by the developments of the inquest with regard to the inspection of boilers by city officials. The inspectors are shown to have been competent, they attended to their duty in examining the boilers at proper intervals, and they withheld certificates because their recommendations had not been complied with. Thus far everything was creditable to the city and its officers. But it appears that the inspectors had no power to enforce their recommendations. They could not order the use of the boilers discontinued until their condition was placed beyond all thought of danger. A fine could be assessed and collected, but that was all. With a full knowledge that a boiler was in such shape that at any time it might explode and hurl somebody into eternity, the inspectors could not order the dangerous apparatus to be laid off. The coroner's jury grasped the full meaning of the situation and censured the city by incorporating in their verdict the following:

> And we would further recommend that the authorities of the city of Chicago take immediate steps to bring about a radical change in the now-existing ordinances governing the inspection of steam boilers. We further recommend that the Boiler Inspector be given full power to enforce all ordinances relating to his office. We further recommend that the Boiler Inspector be empowered to shut down forthwith steam boilers where he apprehends danger to life and limb until repairs are made and found acceptable. We further recommend that all steam boilers condemned by the Boiler Inspector as being unfit for use be destroyed or reduced to scrap iron at the instance of the Inspector.

These recommendations should be adopted at once in the city of Chicago, and in all other cities in which no such regulations are enforced. The use of steam boilers is no longer confined to factories in isolated localities, operated by skilled mechanics, whose precautions against accident, are greater than any city ordinance could prescribe and enforce. They are to be found everywhere—in office buildings, in the great retail stores, in the thickly-peopled hotels, and other places of greatest resort. There is hardly a rod of sidewalk in the business centers of our large cities under which there is not a steam boiler doing duty in some way, and too often under the care of a so-called engineer who merely knows how to start and stop it and to read his gauges. These are the people who should be looked after rigidly, and their boilers should not be permitted to run five minutes after they are found to be out of condition from any cause whatever. Then when an explosion does occur and precious lives are lost the responsibility will be so fixed that somebody will have to pay a heavy penalty for neglect of duty.

The machinery used in modern office buildings in large cities is assuming notable proportions. It is stated that the Masonic Temple at Chicago, which has 21 stories, including the attic and promenade deck, will be furnished with two Corliss engines of 500 horse-power each and eight Scotch marine steel boilers of 125 horse-power each. It might easily be inferred that this power plant was intended, to some extent, for manufacturing, but that is not the case. The power will be exclusively applied to the special object of adapting the building to the use of its tenants for office purposes. There are to be 17 elevators, with a carrying capacity of 50,000 persons daily, and an electric-light system capable of supplying 7000 lights. Water will have to be pumped to tanks on the roof to furnish such a tall building as this with the water required, as it is 302 feet from the level of the street to the roof line. It is estimated by competent and well-informed engineers that the power plants now installed in the office buildings of Chicago would aggregate almost if not quite as much horse-power as one of the largest and best equipped steel-rail works. This is a remarkable incident of the progress of the age.

Griffiths & Cadwalladur, Pittsburgh, Pa., to whom we have made reference in the past, are actively engaged in making terne plates. The concern have been running but a short time, and they inform us that they only make plates for the strictly wholesale jobbing trade. They began work last week and are producing old style hand-coated terne plates of IC and IX gauge. The present capacity of their works is 50 boxes of 14 x 20 plate per day. The black sheets which they use in the manufacture of their plates are made in Pittsburgh of the best open-hearth steel.

The Colorado Iron Works, of Denver, Col., manufacturers of mining machinery, have opened an office in the Phenix Building, Chicago, for the convenience of their Eastern clients. It has been placed in charge of a capable mechanical and mining engineer of long experience, who will be pleased to correspond with those in quest of any character of mining apparatus.

OBITUARY.

TOOKE STRAKER.

Tooke Straker was born in County Kildare, Ireland, in the year 1848. When 12 years old he was sent to a school in France, and from there to the Catholic University at Cambria, from which he graduated at the age of 18. After thus finishing his studies, he went to Hartlepool, England, as bookkeeper for the firm of Straker & Love, where he first gained such knowledge of iron making as enabled him to take a position in the works of Sir I. Lowthian Bell, at Middlesborough, a humble position at first, for he was determined to acquire such absolute practical skill as would give him mastery of the business, but rising by degrees until he became foreman over 12 blast furnaces. From Sir I. Lowthian Bell's establishment he went to take charge of the Forest of Dean Iron Works in Gloucestershire, England, his last position in England. In 1878 Mr. Straker came to this country, and after a short stay in Baltimore went to Boonton, N. J., where he managed one blast furnace. About a year later he took charge of the rolling mill at that place, which had been leased by Joseph Wharton, and when that lease expired he took charge of Mr. Wharton's blast furnace at Hackettstown, N. J. Since that furnace was sold in 1888 Mr. Straker has managed Mr. Wharton's blast furnace at Port Oram, N. J., which he remodeled, and his magnetic mines in this vicinity, which he greatly developed. When Mr. Wharton bought the Morris County Railroad with the branch to the Hibernia Mine, Mr. Straker was put in charge of the property and did much to improve its condition. While thus variously engaged he was found, about the middle of last October, to be suffering from aneurism of the aorta, and was ordered to absolute repose, but this did not avail to prevent a rupture and a profuse hemorrhage, which came near being instantly fatal. After successive rallies and relapses he died on December 26. Mr. Straker was a man of great resolution and diligence, and having personally labored in several branches of the iron industry he commanded the wholesome respect and the affection of those who were employed under him, as well as the confidence of his employer. E. K.

ALFRED LEE.

Alfred Lee, treasurer of A. F. Shapleigh Hardware Company, St. Louis, Mo., who died at his home at Webster Groves, Mo., on December 22, had been with the A. F. Shapleigh Hardware Company since 1854, making 38 years of continuous service. He was born in Boston, Mass., in 1830 and was at the time of his death 62 years of age. He began his business in the employ of Donaldson & Hall, jobbers of hardware, and left them to enter the service of the company whom he served so long and faithfully. Mr. Lee was elected treasurer of the company in 1880, and held that position until his death. He was a prominent member of the Webster Groves Presbyterian Church, and leaves a wife and three children. He was a man of sterling integrity, stood high in commercial circles, and as a financier was rated among the best. The A. F. Shapleigh Hardware Company have lost a valuable man, and one whom it will be hard to replace.

WM. S. BRYSON.

Wm. S. Bryson, Washington, Pa., died at his residence on the morning of January 20. He was born on March 1, 1822, in Washington. The deceased first learned the cabinet making trade, and after working at it for nine years he went into the hardware business in 1847, and continued this vocation until his death.

New England's Iron Industry.

Dr. William M. Sweet of Philadelphia, who has charge of the census inquiry, has done the iron trade of the country a good service in clearly showing the present status of the industry in New England. The decline of that branch of manufacturing in some lines has been the subject of a good deal of misrepresentation. Efforts have been made to create the impression that this section of our country has been made the victim of unjust laws, and that a prompt revival would follow a removal of the duty on ore and on coal. Dr. Sweet presents facts which prove that while a decrease has taken place in the number of establishments engaged in the manufacture of iron and steel in 1890 as compared with 1880, there has been an increase in the value of finished products. The following are the figures:

Iron and steel works.	1890.	1880.	1870.
Number of establishments	35	61	48
Total capital invested	$13,415,450	$11,560,408	$5,909,000
Average number of hands employed	a6,645	8,654	3,815
Total wages paid	a$3,224,318	$3,357,911	$2,168,719
Total cost of materials	$9,286,050	$9,518,570	$7,398,150
Total value of products	$15,105,441	$14,558,627	$10,824,603

a Excluding officers or firm members and clerks or salesmen.

Those familiar with iron manufacturing in New England will promptly recognize the causes which have been at work, from an analysis of the raw materials used and the products of the rolling mills, since the entire pig industry has been confined to the production of a small quantity of charcoal pig. In the following table are presented the materials consumed in rolling mills and steel works, the unit being the ton net of 2000 pounds:

Materials.	1890. Quantities.	1890. Cost.	1880. Quantities.	1880. Cost.
Total		$8,651,908		$8,838,874
Iron ore (tons)	2,277	14,931	20,212	141,154
Pig iron (tons)	17,565	359,661	56,918	1,352,553
Spiegeleisen (tons)	623	44,511	855	21,500
Old iron rails (tons)	26,279	655,762	36,503	1,048,414
Other old or scrap iron (tons)	71,939	1,168,528	78,267	2,108,820
Old steel rails (tons)	2,668	50,692	1,400	35,000
Other old or scrap steel (tons)	20,145	343,531	5,008	156,759
Hammered iron ore blooms (tons)	170	7,200	8,187	435,150
Pig or scrap blooms (tons)			2,226	89,010
Purchased Bessemer steel (tons)	83,884	2,489,502	16,600	964,000
Purchased open-hearth steel (tons)	10,825	365,207	3,440	266,200
Anthracite coal (tons)	16,829	81,702	44,095	20 ,046
Bituminous coal (tons)	186,900	760,288	21 ,055	1,087,413
Coke (tons)	5,350	35,571	3,545	10,410
Charcoal (bushels)	919,303	76,289	673,786	50,113
All other materials (*a*)		2,198,623		922,332

a Includes purchased muck bar, Swedish billets and bars, purchased wire rods, copper and miscellaneous supplies.

It will be noted that the principal reliance of the works is old material, of which the consumption was 121,178 net tons in 1880 and 121,031 in 1890. While the use of pig has declined nearly 40,000 tons, thus closely reflecting the abandonment of the puddling furnace, the consumption of steel has advanced by nearly 75,000 tons. This figure does not, probably, cover the entire increase, because the unenumerated items covered by a valuation of $922,332 in 1880 and $2,198,623 in 1890, include considerable rolled steel in the latter year.

A classified table of products is given by Dr. Sweet, which we reproduce below.

The most striking falling off has been in the cut-nail trade. In 1880 New England, then struggling against the supremacy of Eastern and Central Pennsylvania, made 495,360 kegs of iron nails. In 1890 its nail product had dropped to 217,559 kegs, succumbing to the combined competition of Western cut nails and wire nails. The greatest increase has been in the item "All other products," under Bessemer steel, which is chiefly wire, the greater part thereof being the make of the Washburn & Moen Mfg. Company.

Dr. Sweet well summarizes the principal causes which have induced the relative decline in the iron industry in New England, which has gained but little, when other sections of the country were progressing with amazing rapidity:

"The rapid progress that has been made in this country in the manufacture of steel, the cheapening of the product, and its consequent substitution for iron for many uses, have been important factors in the decline of the iron rolling mill industry of New England. The conditions in New England being generally unfavorable for the economical manufacture of the crude forms of steel, most of the iron manufacturers have been reluctant to assume the risks attendant upon the establishment of steel plants in connection with their works to meet the increasing demand for this class of material, preferring to depend upon a supply of crude steel obtained from works more advantageously located in other sections of this country or from abroad. Apart from the natural disadvantages of location, many of the iron manufacturers of New England have not shown a disposition to accommodate themselves to changing conditions, and not a few of them have retired from business in preference to remodeling their plants to meet modern requirements. The rerolling of imported Norway and Swedish iron was formerly an important branch of the iron industry of New England, but within the past decade it has dwindled to small proportions, owing chiefly to the substitution of steel for uses to which this class of iron was formerly applied."

It is only just to state that, in a less marked degree, the iron industry of New York, New Jersey and Eastern Pennsylvania has suffered from similar causes. There is many a furnace, many a rolling mill in the section referred to which is falling back hopelessly into the rear ranks, the appliances and the methods being today what they were a decade since.

Class of products.	1890. Quantities.	1890. Value.	1880. Quantities.	1880. Value.
Aggregate value of products		$14,219,003		$13,513,531
IRON:				
Bar (tons)	39,394	1,499,152	32,704	1,738,604
Rod (tons)	8,013	377,200	32,535	2,479,635
Skelp (tons)			7,163	504,513
Rails (tons)			7,100	368,000
Plates, except nail plate (tons)	1,790	114,043	25,389	1,506,461
Hoop (tons)			4,358	252,062
Cut nails (kegs of 100 pounds)	116,840	260,624	495,360	1,789,929
All other products (tons)	31,064	1,926,032	14,675	971,778
STEEL—BESSEMER:				
Bar (tons)	1,070	56,500		
Rails (tons)			1,500	112,500
Plates, except nail plate (tons)	12,255	534,480		
Cut nails (kegs of 100 pounds)	100,719	227,084		
All other products (tons)	75,385	4,960,862	14,906	1,500,000
STEEL—OPEN-HEARTH:				
Bar (tons)	7,335	370,000	3,704	326,400
Rails (tons)			3,000	195,000
Plates (tons)	10,700	527,329	3,578	472,260
All other products (tons)	7,667	717,085	4,394	451,800
STEEL—CRUCIBLE:				
Finished products (tons)	2,753	470,174	2,205	318,923
VALUE OF ALL OTHER PRODUCTS		2,178,438		525,666

Robidoux & Corby, manufacturers' agents, have located in Room 425 Commercial Building, St. Louis. Mr. Robidoux was formerly with H. L. Fox & Co., and later acted as manufacturers' agent. Frank F. Corby was connected with the Inland Oil Company. They represent the American Metal Company, Willemsen Belting Company, Chattanooga Foundry and Pipe Works and Anderson Bolt Works.

The Worcester Steel Works, at Worcester, Mass., which have commanded public attention for so long a time, owing to the legal complications growing out of their financial failure, have passed into the hands of a syndicate of New York parties, with the prospect that they will be put in immediate operation. The persons at the head of the syndicate are: Major John Byrne, representing the firm of J. B. Newcomb & Co., and Lewis Boyle & Co., both of Wall street, New York. The terms of the contract call for $170,000 for the property, of which amount $17,000 has been paid down, and $153,000 is to be paid inside of 90 days.

MANUFACTURING.

Iron and Steel.

It is announced that the Salem Wire Nail Company, with factories at Salem, Ohio, and Findlay, Ohio, have increased their capital stock from $100,000 to $500,000.

Last week Alexander Thomas, assignee of Jas. P. Witherow of Pittsburgh, filed a petition for an order directing A. W. Thompson, who was appointed receiver for Jas. P. Witherow by the Lawrence County Court prior to the letters of assignment, to turn over all property of Jas. P. Witherow in his hands to the assignee. It was stated that A. W. Thompson was willing to turn over the property if provision was made to pay $12,466 worth of receiver's certificates already issued and outstanding. The order was granted by the courts, and the assignee was directed to pay the certificates.

It is stated that certain capitalists have agreed to build a rolling mill to cost $35,000 at New Lisbon, Ohio, providing the citizens of New Lisbon lend them an additional $15,000 for five years without interest.

Cartwright, McCurdy & Co., proprietors of the Enterprise Iron Works, Youngstown, Ohio, have recently moved into a commodious new office building recently erected by that firm on West Federal street in that city.

At the annual meeting of the stockholders of the Falcon Iron and Nail Company of Niles, Ohio, held last week, the following directors were elected: Warner Arms, Myron I. Arms, Lawson Arms, Tod Ford, H. H. Stambaugh. The directors organized by electing Warner Arms, president; Tod Ford, vice-president, and Myron I. Arms, secretary and treasurer.

The annual meeting of the Mahoning and Shenango Valley Car Service Association was held in Youngstown, Ohio, last week, all the railroad lines in the Mahoning and Shenango valleys being represented. Thomas H. Morris was unanimously re-elected general manager. Resolutions were adopted at the meeting to the effect that the association having exhausted all its resources in trying to effect a settlement with the iron manufacturers of both valleys on the question of demurrage charges, the suits now pending would be prosecuted through the courts and additional suits commenced against other parties.

Last week Furnace C of the Crane Iron Company, at Catasauqua, Pa., was put in operation. The entire blast-furnace plant of this firm, located at that place, consisting of four stacks, is now in operation. Some extensive improvements and additions have been made to the stacks within the last year, and the entire plant is now in first-class condition.

Edge Hill Furnace, formerly operated by the Crane Iron Company of Catasauqua, Pa., has gone out of blast for an indefinite period. The Crane Iron Company have a storage lease on the property adjoining the furnace and have piled hundreds of tons of iron on the ground ready for shipment.

A suspension of work was ordered in two departments of the Pottsville Iron and Steel Company's rolling mills, owing to a scarcity of orders.

There were filed at the County Clerk's office, Utica, N. Y., January 21, three judgments against the Kirkland Iron Company aggregating, with costs and disbursements, $72,280.10. Sheriff Bielby has levied on the personal property of the company at Kirkland and announces that the same will be offered for sale January 29, at 10 a.m. The trustees of the company are J. A. Williams of Utica, E. B. Buckley of Antwerp, Jefferson County, and C. I. Williams of Utica. The Clinton Iron Company were organized, with a capital of $100,000, in November, 1872, and commenced operations in 1874. Work was suspended in 1876, and in 1878, at a mortgage foreclosure sale, Theodore W. Dwight and J. A. Williams bought the plant. The Kirkland Iron Company were organized, with a capital of $50,000, in 1880, and the plant was operated the larger part of the time until a year ago last July, when it was closed and has not been reopened since. The plant was closed because of the depressed condition of the iron market and the large supply of iron, 14,000 tons, on hand. Since shutting down 10,000 tons have been sold, leaving 4000 tons now on hand. The real estate is owned by Theodore Dwight of Clinton and J. A. Williams of Utica, and was leased by the Kirkland Iron Company.

The manufacturing concerns of Chattanooga, Tenn., are generally in good condition, and report an increase of business since the first of the year. The Chattanooga Foundry and Pipe Works have only one pit idle and are working a full force of men. The Chickamauga Foundry and Machine Company are just completing a large addition to their plant, made necessary by the increase in their business. The Chattanooga Car and Foundry Company have been kept very busy of late, and are now running an extra force. They have a large order for oil cars with tanks attached. The Southern Iron Company cannot keep up with their orders for steel with their present capacity, and early in the spring will greatly increase their capacity.

The North Carolina Iron and Steel Works Company were organized about a year ago at Greensboro, N. C., with $1,000,000 capital. They have arranged for the vigorous pushing of their enterprise, and have begun the erection of furnaces.

The Shenandoah, (Va.) Iron Furnace has blown out until spring.

R. & A. Hecksher & Co., Philadelphia, blew in their furnace at Swedeland, Pa., at 3 p.m., Saturday, January 23, 1892.

We are advised that the report that Cartwright, McCurdy & Co., proprietors of the Enterprise Iron Works, at Youngstown, Ohio, contemplated increasing their capacity very largely in the near future is without foundation. There is also no truth in the report that this firm have recently purchased the rolling mill at Struthers, Ohio. The concern have not made any purchases of rolling mill property recently, their last purchase being that of the plant of the Pomeroy Iron Company, located at Pomeroy, Ohio.

O. P. Mason, Bellaire, Ohio, inventor and manufacturer of the Mason Ingot Manipulator, last week closed an order with Carnegie, Phipps & Co., Limited, through Jno. A. Potter, superintendent, for the erection of a Mason Ingot Manipulator in the Homestead Steel Works of that firm. The machine is to be completed and erected at as early a date as possible. Mr. Mason claims that for two-high blooming mills his manipulator is of particular value. This is the second ingot manipulator sold by Mr. Mason to Carnegie, Phipps & Co., Limited, they having had one in operation for some time.

The new Bessemer steel plant of the Ashland Steel Company, at Ashland, Ky., has commenced operations. The plant was erected by the Pittsburgh Iron and Steel Engineering Company. The product will be nail slabs.

The Roane Iron Company of Chattanooga, Tenn., have elected the following officers and directors for the ensuing year: H. S. Chamberlain, president; O. L. Hurlbut, secretary. Directors: Samuel Thomas, C. M. McGhee and A. S. Hewitt of New York; E. R. Forsyth of Greenburg, Ind.; W. E. Rockwood of Indianapolis, Ind.; C. M. McClung of Knoxville; J. F. Tarwater of Rockwood; D. E. Rees, H. S. Chamberlain, T. G. Montague and C. W. Vinson.

Duluth, Minn., parties have incorporated the Anti Cokan Iron Company, with a capital of $250,000.

The Pottsville Iron and Steel Company have suspended work in the 23 and 19 inch department of their rolling mill at Pottsville, Pa., owing, it is stated, to a scarcity of orders.

The new wage scale at the Riverside Steel Works, Wheeling, W. Va., has been signed and provides for practically the same rate of wages as last year.

At Harriman, Tenn., the Harriman Furnace Company, capital stock $500,000, have been organized for the purpose of erecting an iron furnace.

The new Raney & Berger furnace, at New Castle, Pa., is about completed, but will probably not be blown in for some time to come.

It is announced that Cofrode & Saylor contemplate the erection of a steel plant adjoining their bridge works at Reading, Pa., and that the work of construction will begin as soon as the company decide whether to employ the Bessemer or the open-hearth process.

The new 18-inch bar train at the Elmira Rolling Mills, Elmira, N. Y., has been started.

The rolling mill of the Cumberland Nail and Iron Works, Bridgeton, N. J., has started up after several weeks' idleness.

A company has been organized, with a capital of $150,000, and will apply for a charter under the name of the Penn Steel Casting and Machine Company, for the purpose of conducting an open-hearth steel works at Chester, Pa. Fred. Baldt, formerly connected with the Standard Steel Company, is the prime mover in the new enterprise, and will be the general manager of the new company. Operations will be carried on in the plant formerly occupied by the Chester Foundry and Machine Company, and a foundry will be erected on land adjoining. The latter will be 225 x 100 feet.

The Baltimore Malleable Iron and Steel Casting Company have been formed at Baltimore, Md., and a site, 334 x 120 feet, purchased for the location of works. Two buildings, 100 x 50 feet and 100 x 40 feet, respectively, will be erected.

The New Castle Wire Nail Company of New Castle, Pa., manufacturers of steel wire nails of all kinds, have some important extensions and additions to their plant in contemplation at present. When these have been completed the output of the firm will have been increased about 50 per cent., and it is expected that their production of wire nails will be as large as that of any concern in the country.

Julian Kennedy, the well known engineer and contractor, of Pittsburgh, has closed a contract with Carnegie, Phipps & Co., Limited, for the erection of a new converting department for the Homestead Steel Works, at Homestead, Pa. It will be equipped with two 10-ton vessels with necessary cranes, ladles, &c. This new converting department will replace the old converting plant, which will probably be turned into a ladle and bottom house by the firm. The new converting department will be erected only a short distance from the site of the old converting department.

Machinery.

The directors of the Westinghouse Electric and Mfg. Company of Pittsburgh have declared an *ad interim* dividend of 1 per cent. on the preferred stock of that company for the fractional period of the quarter ending December 31, 1891, payable on February 1, 1892. Transfer books of the company were closed on January 25 and will remain closed until February 5.

Pittsburgh stockholders of the Westinghouse Air Brake Company, Limited, of London, England, have received notice that the directors, at a meeting held in London on December 30, 1891, declared a dividend at the rate of 20 per cent. per annum for the six months ending December 31, 1891; this is 10 per cent. for the past six months. This makes 14 per cent. paid for last year, against 8 per cent. for 1890. It is stated that the Westinghouse Air Brake Company of Pittsburgh hold $1,000,000 of the stock of the foreign company.

It is reported that at the forthcoming annual meeting of the Union Switch and Signal Company of Pittsburgh, Pa., which will be held in that city in a short time, it will be shown that the company are practically out of debt. The plant of the firm is running full time, and it seems to be the impression that the company are in a very strong position.

The Lane & Bodley Company, Cincinnati, Ohio, are just in receipt of an order for a complete 60 horse-power saw mill outfit, approximating $3000 in value, from C. F. Small of Fiji Islands, through their London agents. The correspondence arising in this case owing to the distance occupied an entire year, notwithstanding the fact that unnecessary delays were entirely avoided. The outfit will be shipped via New York and Sydney, Australia.

T. J. Cady and others will erect a foundry at Columbus, Miss.

A company has been organized at Chattanooga, Tenn., to be known as the C. C. Howard Stove Company. J. H. Burnett, C. C. Howard and others are incorporators. They will manufacture stoves, &c.

The machine shops of W. J. Cooker & Bro., Dublin, Ga., were destroyed by fire last week. Loss, $11,000; insurance, $5000.

D. S. McCullough has purchased the Shelbyville Foundry and Machine Shop at Shelbyville, Tenn., and will greatly increase its capacity.

The controlling interest in the Williams Mfg. Company's sewing machine factory at Plattsburg, N. Y., has been purchased by Smith M. Weed, and an American company will be organized.

The removal of the large foundry of the Pierce Mfg. Company, which is located at Geneva, N. Y., to Syracuse, N. Y., is talked of. The company are negotiating now to erect and equip the largest foundry and machine shop in Syracuse for the manufacture of their Florida steam and hot-water heaters and other articles. The concern employs 130 men.

E. C. Wearfritz, Little Rock, Ark., has organized a stock company for the erection of a plant for the manufacture of engines, boilers, &c., at that point.

Martin H. Dooly, B. S. Ivy and J. B. Withers will erect a brass foundry at Atlanta, Ga., under the firm name of Dooly, Ivy & Co. They propose to manufacture all kinds of brasses for engines, electric cars, &c.

Bement, Miles & Co., Philadelphia, have shipped one 14-inch gun lathe, the first completed on the order of United States Navy Department. In their shops may be seen machines of many patterns and designs. Among them are noticeable a 96 inch by 20 foot planer, with camel-back bed, adding stiffness and strength; verti-

cal and horizontal planer with longitudinal feed of 22 feet and vertical 20 feet; a 48-inch slotter, just completed, with transverse and longitudinal feed of 60 inches, the largest ever built and for work of a heavy character; special facing lathes for locomotive shops, and others in course of erection, such as car wheel, cylinder and horizontal boring mills, double-head shapers, upright and radial drills, wheel lathes, &c. Contracts on hand for two 6-ton hammers and 120 inch by 20 foot planer.

Wm. Sellers & Co., Incorporated, Philadelphia, are pushing rapidly to completion the 16-inch gun lathe for United States Navy Department and are in hopes of having it running in two or three weeks, when several tests will be made. The three 14-inch lathes are well under way.

Israel H. Johnson, Jr., & Co., Philadelphia, have shipped to Lloyd, Booth & Co., Youngstown, Ohio, one of their standard lathes 42 inches by 28 feet. They also have a lathe 48 inches by 22 feet in course of erection for the Midvale Steel Works, designed especially for their heavy work.

A queer robbery was perpetrated at Piedmont, Ala., a few days ago. The entire machinery outfit of the Piedmont Foundry and Machine Company, even to the engine and boiler, was stolen and there is no clue to the thief. The machinery was sold some time ago at sheriff's sale to the Chattanooga Saw Works

The Henderson Machine Company, Philadelphia, lately established, making as their specialty cutting dies, stamping machinery and tools for sheet-metal workers, have already received several orders for special dies. A press presenting many new features will shortly be introduced.

The demand for the patent mandrel-rolled hollow staybolts made by the Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, is fast increasing. The sizes in greatest demand are ¾, 15-16 and 1 inch in diameter, with ¼-inch hole through the center. The New York, Lake Erie and Western, the Chicago, Rock Island and Pacific, and the New York, Chicago and St. Louis railroads are among the most recent companies that have adopted the hollow staybolts.

The Henry R. Worthington Company have filed articles of incorporation at Elizabeth, N. J., with a capital of $3,500,000, divided into 35,000 shares of $100 each. The company will engage in the manufacture of hydraulic pumps and pumping machinery at Elizabethport and Brooklyn. The incorporators and stockholders are Charles C. Worthington of Irvington, William A. Perry of Bay Ridge, Horace G. Tarr of Montclair, Josephus F. Holloway of New York City and Theodore F. Miller of Brooklyn.

The iron founders who went on strike about a month since at the Baldwin Iron Works, Ottawa, Ont., for shorter hours, have returned to work at the old hours.

The Steel Cable Engineering Company, capital stock $100,000, of which $300 is paid in, have been organized at Portland, Maine, for the purpose of carrying on a general foundry business.

The Geiser Mfg. Company of Hagerstown, Md, have closed a contract with an implement company in South Dakota for 100 traction engines and 275 separators. The company now have orders enough booked to keep the works running on double turn for nearly a year.

B. H. Cramp & Co., brass founders, of Philadelphia, will erect a factory 150 x 60 feet, two stories high, of corrugated iron, in that city, for the manufacture of the Driggs-Schroeder guns.

A plant for the manufacture of Wheelock engines will shortly be erected by the California Engineering Company, who are now looking for a suitable site. The company have a capital stock of $600,000, and, it is said, will build on a large scale.

Schneider & Trenkamp's brass foundry and stove manufactory, at Cleveland, Ohio, have been burned, entailing a loss variously estimated at from $40,000 to $100,000. The plant was a large one, and contained much valuable machinery, besides a large quantity of stock and many valuable patterns which it will be impossible to duplicate or replace.

About 150 men have been on a strike at the Monitor Iron Works, Sing Sing, N. Y., owing to a reduction in wages.

The foundry of the new National Brass Works, at North Reading, Pa., is completed, and operations will begin at once.

Hardware.

Toledo Block Works, Toledo, Ohio, have made some important changes in their plant, and as soon as the weather will permit intend erecting a large storeroom and office building, which will greatly facilitate the manufacturing and shipping of their goods. They advise us that their business for the past year has been very satisfactory, as their sales for 1891 were far in excess of previous years.

J. T. Davis, who has recently assumed the general management of the works of the Baker Chain and Wagon Iron Mfg. Company, Allegheny, Pa., was formerly in charge of the chain department of the Findlay Rolling Mill Company of Findlay, Ohio.

Empire Rubber Company, Trenton, N. J., have purchased the plant of the former Star Rubber Company, and now have the same in operation. In addition to the present very complete machinery they intend adding several of the latest improved and most modern machines used in the manufacture of mechanical rubber goods. They have also purchased the entire plant and appliances of the New York Woven Hose Company, and will not only make a specialty of ¾-inch cotton hose, but will also give particular attention to high-grade mill and fire hose

The Ludlow-Saylor Wire Company, St. Louis, Mo., held their annual meeting on the 20th inst. and elected the following officers and directors: President Geo. D. Dana, vice-president C. L. Dean, secretary and treasurer Frank Lowe, superintendent of the manufacturing department E. J. Gould; directors Geo. D Dana, C. L. Dean, Wm. Duncan, Frank Lowe and H. L. Meier. Geo D. Dana is well and favorably known as the secretary of the Excelsior Mfg. Company, and Mr. Dean, who will assume the active management of the concern, was formerly treasurer, in which capacity he served the company for a number of years. E. J. Gould, who was elected superintendent, has been in the employ of the house 11 years, entering the establishment as an office boy and working himself up through the various departments, and is therefore thoroughly conversant with every branch of the business.

The Champion Blower & Forge Company of Lancaster, Pa., are putting in new and improved machinery to enable them to keep pace with the demand for their specialties. A cable order was received from Copenhagen, Denmark, a few days ago, from which it may be presumed that their productions are considered superior to any that are known in Europe.

The Whitman & Barnes Mfg. Company, Akron, Ohio, have absorbed the business of the Akron Diamond Drill and Tool Company of Akron, and having enlarged the facilities of that company and moved their machinery to the factory of the above firm, are prepared for a larger and more satisfactory business than in the past. They are prepared to supply promptly all kinds of twist drills, reamers, taps, milling cutters and special tools, and expect to carry a stock of regular goods at their several factories and stores.

F. E. Kohler & Co., successors to the Chieftain Company, Canton, Ohio, advise us that their trade in Hardware specialties greatly increased last fall and that the outlook for the spring trade is excellent. They mention their Royal saw set, vegetable masher, post-hole diggers and curry combs as articles appreciated by the trade.

The Wire Goods Company of Worcester, Mass., have purchased the entire plant, including machines, tools, patents, good will, &c., of Alexander McDonald of Worcester, manufacturer of toilet implements, finger nail trimmers, tweezers, &c. They intend to very much improve the quality of these goods and to put the whole line on a better plane, and also to bring it up to a standard of excellence which will insure the popularity to which the goods are entitled. It will be a month or six weeks before they can get a full stock upon the market, but we are advised that they are pushing it rapidly and that those customers who have been impatient because of the delay will soon be able to get any reasonable wants in this line supplied.

Articles have recently been filed by which the business of W. & J. Tiebout, 16 Chambers street, New York, becomes incorporated. The management continues precisely as before.

The Duplex Hanger Company, Cleveland, Ohio, advise us that at the annual meeting of the Building Inspectors and Commissioners of the United States a resolution was passed which is highly complimentary to the Duplex joist hanger. The substance of the resolution was that after a thorough examination and inspection of buildings containing the hanger, they declare that it is in merit all that the company claim for it.

The horseshoe department of the Old Dominion Iron and Nail Works Company, at Manchester, Va., has resumed operations after being shut down for about two months.

Miscellaneous.

W. H. Chaddock, the superintendent of the Anniston (Ala.) works of the United States Rolling Stock Company, states that Receiver Hegewisch will at once make application for permission to sell the different plants of the concern on March 1, so as to facilitate the proposed reorganization of the company.

It is stated that the large plant of the Bridgeport (Ala.) Pipe Works will resume operations at an early day. The works only make the larger sizes of pipe and orders are therefore somewhat slow, but they now have a large number on their books and expect to soon be justified in commencing operations.

The Harvest Stove Company, South Pittsburg, Tenn., made an assignment Monday, the 18th inst., with liabilities of $122,206. The assets have not been reported, but it is claimed they are over $200,000. The company were organized in 1887 and were then known as the Perry Stove Mfg. Company, but about two years ago the name was changed to the Harvest Stove Company.

H. Belfield & Co., Philadelphia, are placing on the market a locomotive engineer's torch of a more substantial character than commonly used; hard usage, which ordinarily causes leakage, has no effect upon this torch, being made of wrought and malleable iron, cylindrical in shape, of convenient size for handling.

It is rumored that the New York Central Railroad Company may erect shops at Buffalo, N. Y., where all their rolling stock and locomotives will be manufactured. It is known that the Central has long desired to make its own equipment and a large appropriation is said to have been made for the purpose of establishing shops. These, according to report, will be the most extensive of the kind in the world, and will even rival those of the Pennsylvania system at Altoona. The Central authorities have refused to confirm the rumor, but the press of Buffalo claim to be in receipt of information justifying them in believing that there is something behind the report.

The Birmingham Brass Company have filed a certificate of organization with the Secretary of State of Connecticut. The capital is $116,000, and the plant will be located at Huntington. The company will deal in brass, German silver and other alloys and metals.

The Longview Valley Stove Works, located at Longview, Texas, will remove their plant to Tyler early the coming spring.

Officers have been elected by the Magnetic Separator Company, Troy, N. Y., as follows: Directors, George P. Ide, Sheldon Norton, Alexander T. Porter, William H. Bradford, John H. Tupper, Gordon G. Shrander, Frank Gilbert; president, George P. Ide; secretary and treasurer, John H. Tupper.

The Pruyn Mfg. Company of Hoosick Falls, N. Y., it is said, have had an offer from a Western city to remove their business there. The offer includes the use of buildings which cost $50,000 and 5 acres of land, in addition to rent free. Inducements are held out also for increasing the capital stock and business, in order to manufacture other agricultural implements as well as potato diggers. The directors of the company will consider the matter.

A meeting of the stockholders of the Youngstown Stamping Company of Youngstown, Ohio, manufacturers of stamped ware and glass oil cans, was held in that city last week. The following board of directors was elected: Robert L. Walker, L. G. Blackman, L. Lane, J. Craig Smith, F. J. Jeannot, George E. McNabb, John H. Walker, C. W. Hunt and C. D. Hine. The board organized by electing Robert L. Walker, president; L. Lane, vice-president; W. C. Hine, secretary and treasurer. The product of the Youngstown Stamping Company for the year 1891 was very large, consisting of about 500,000 oil cans and about 900,000 fruit cans.

The roundhouse and machine shop of the New Orleans and Southern Railroad, near New Orleans, La., have been destroyed by fire; loss, $60,000.

Frank C. Davenport, importer of and dealer in metals, sheet iron, tin plate, &c., at 82 North street, Boston, has made an assignment. The liabilities are reported to be about $200,000, of which about one-half is secured by merchandise.

The California Iron, Steel and Tin Plate Company have been organized and incorporated to operate in New Mexico and California. The capital stock is $5,000,000, and the incorporators T. R. Gable, C. L. Hubbs and Jesse Anthony of Albuquerque, N. M.

The Hopper Aluminum Company, capitalized at $1,000,000, and the Pacific Coast Aluminum Company, also capitalized at $1,000,000, $2500 paid in, have filed articles of incorporation at San Francisco, Cal.

TRADE REPORT.

With the exception of a continuance of a confident feeling at Chicago, the developments of the week point to disappointment. Business has been light in nearly all distributing centers and some weak spots have developed. Bessemer Pig for prompt delivery is lower and weaker in Pittsburgh, while in Billets, in that and in the Wheeling district, the nominal price of $25 is maintained in the total absence of business. In the East, the Thomas Iron Company have marked down their price 50¢ a ton on Foundry grades, and have secured some orders thereby, but the matter is of interest only to their own particular customers, since rival Irons have sold as low and lower for a long time past.

Orders for Steel Rails are coming along very slowly. Contradictory statements are made as to whether the report of sales for 1892 has been put out or not.

The inference is drawn from the utterance of some of the mills on this point that the figures do not come up as well as was given out some time since. The options which were talked of as a feature do not appear to have been very eagerly taken thus far.

No contracts of any magnitude have been taken in Structural Material, and some of the Eastern mills are again spoken of as very hungry for work. An Eastern and a Pittsburgh mill have closed, each for about 2500 tons of Ship Plates for the Pacific Coast at close figures. Along the whole line of manufactured goods prices continue distressingly low and thus far there have been only isolated indications of a modest upward tendency.

Copper is again weaker, Lake Ingot having receded to 10.70¢ @ 10.80¢, on a small volume of business. Tin, too, has been dropping off, and Lead cannot advance in the face of danger of importations of foreign metal.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., January 26, 1892.

No change of any account can be noted in the Iron trade. There is no improvement in the demand or in prices, nor is there anything in the outlook to warrant hopes of that kind for the near future. It is some relief perhaps to know that the aggregate volume of business is large; if not, what becomes of the largest output of Pig Iron the country has ever known? Production is on the basis of very nearly 10,000,000 tons per annum, yet the accumulations are no more than in ordinary times. Stocks on hand are only about 6 or 7 % of the year's production, so that this immense output is being used somewhere. Business cannot be so very bad in view of these facts, yet it is terribly disappointing, especially to mill owners. Prices of finished material seem to have no bottom whatever, and while these conditions prevail, it will not be much comfort to manufacturers to know that the country is doing a larger business than ever before. Nevertheless it is true that the country is doing the largest business on record, although in many departments at still slowly receding prices. One of two things must happen soon—viz., an improvement in prices, or a curtailment of production. This would have taken place long ago had it not been for the confident expectation of a much heavier demand than has yet been met with. These bright hopes have unoubtedly had some influence in defeating the object that every one had in view. In Wall street phraseology, the future was discounted too heavily. The market has not had a chance to improve, but the inherent strength of the position has kept it from breaking all to pieces. There does not seen to have been any mistake in regard to general conditions, so that the ultimate outcome may yet be all that has been hoped and expected, but for all practical purposes the good times are as far off as ever. Nevertheless, if immense crop, easy money and heavy requirements do not ultimately produce a big business and improving prices it will be contrary to all former experience. Hopes of the future are therefore still strong, but as regards the present, there is both disappointment and disgust.

Pig Iron.—A great deal of capital is being made out of the reported heavy sales of Ores at an advance on last year's prices. We have not the figures at hand to prove or disprove the assertion, but one of the most experienced merchants in the trade remarked to-day that "whenever the two leading buyers opened the market for Ores at higher prices, it was a pretty sure thing that the advance would not be maintained." Consequently when he was asked what effect these transactions would have on the price of pig metal, he replied: "No effect whatever, because there has been no general buying—and won't be for some time to come." The substance of the conversation is embodied in the few words quoted, and as they were substantially confirmed by another authority whose interests were entirely in a different direction, they may be worth presenting in connection with this article. If Ores are going to cost more money than last year, Pig Iron will cost more money, and more money must be realized for it. Be that as it may, there are very few in this vicinity who regard the question as in any degree settled. A very large quantity of Ores are yet to be delivered on last year's contracts, and the condition of the market is not such as to cause any great anxiety in regard to additional purchases. These remarks, of course, represent the feeling here. Elsewhere it may be entirely different, as will be shown by *The Iron Age* reports from its various offices. As regards the demand for Pig Iron, there is no improvement, neither is there any very material falling off. Sales require to be pushed along the entire line. Neglect in watching one's customers is liable to be taken advantage of by some new competitor; consequently sellers are always around. Some have just "a carload shipped by mistake," which they will sell at a sacrifice; some will promise a higher grading; some one thing, some another, but in every instance "it's a job lot," a chance "that rarely occurs," &c. This all goes to show how seriously depressed the market is. It is not really lower than it was some time ago, but it's hard to make sales, while makers say it is impossible to make any further reduction in prices. These remarks do not apply to all brands of Iron; there are some—both Pennsylvania and Virginia Irons—that are taken without urging, but they are brands that are known and approved, and have, therefore, a permanent clientage. It is the new brands that make all the trouble, brands that are here only once in a while; quality may be all right, or it may not, but whatever it may be, there is no certainty of the Iron being permanently available, hence special inducements are necessary to secure a market. Competition of this character is more marked at interior points than in this vicinity—the Lebanon and Susquehanna Valley being specially favored (?) in this respect. For all practical purposes, however, there is little or no change from last week and prices realized are about as follows, varying according to quantity, brand, date and point of delivery, &.:

Ohio Softeners, No. 1x	$18.00	@	$18.50
Ohio Softeners, No. 2x	17.00	@	17.50
Standard Penna, No. 1x	17.50	@	18.00
Standard Penna, No. 2x	16 00	@	16.50
Medium Penna, No. 1x	17 00	@	17.25
Medium Penna, No. 2x	15.75	@	16.00
No. 2 Southern	14.50	@	15.00
No. 3 Southern	13.50	@	14.00
Virginia, No. 1x	16.00	@	17.00
Virginia, No. 2x	15.00	@	15 75
Standard Neutral All-Ore Forge	14 25	@	15.00
Ordinary Forge Cinder mixed	13 50	@	14.00
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Bessemer and Low Phosphorus Iron.—A slight improvement in the demand may be noted, and sales are of more frequent occurrence, but not in very large lots. Prices vary from $16.50 to $17, at furnace, and $18.50 to $19.50, respectively.

Ferromanganese.—A few small lots of 80 % are taken at about $62 @ $62.50, but buyers of large lots are not inclined to pay within $1 ₱ ton of these prices.

Steel Slabs and Billets.—The market is very dull, and on lots for immediate delivery prices are down to the lowest of the low figures quoted during 1891. One or two small lots were taken a day or two ago at about $25.75, delivered at Susquehanna points, with offers to sell at $26.25 at Philadelphia or near by points, but buyers made no response. For March and later months 50¢ to $1 more money would be asked, but there is no disposition to place orders, so that in the absence of demand prices are almost nominal.

Steel Rails.—The general position shows very little change from that previously reported. There is a fair inquiry, and prospects for business are said to be encouraging, especially in the West, although at Eastern mills things are not as active as was expected. Still it is not unlikely that some large orders may be forthcoming toward spring, and manufacturers are inclined to look for increasing activity in the near future. Recent sales include 12,000 tons to the Louisville and Nashville, divided between the Cambria and Carnegie companies.

Muck Bars.—There is little or nothing doing in this article, so that it is impossible to quote prices with any degree of accuracy. Some parties have been offering to sell at $25, f.o.b. cars, others hold for $26 @ $26.50, but no one seems to want any at present at any price.

Bar Iron.—Market extremely dull, with prices weak and irregular. In some cases 1.70¢ @ 1.75¢ is firmly adhered to for city deliveries, but in others, and especially at interior points, 1.60¢ @ 1.65¢ are not unusual figures. The supply is vastly in excess of the demand, and as there is no immediate prospect of a larger business, manufacturers are taking all they can get at as near to ordinary quotations as circumstances will permit.

Plates.—In this department prices are more demoralized than ever, especially on the higher grades of Steel. The demand is fairly up to an average, but the capacity for production has become so large that it is almost impossible to keep the mills employed. The absence of demand for Ship Plate and for common material generally is one cause of the cutting in the higher grades, and at present there is no prospect of anything better in the near future. Quatations are nominally as follows, but on desirable orders considerably

lower figures have been named within the past few days:

	Iron.	Steel.
Tank Plates	1.80 @ 1.90¢	1.85 @ 1.95¢
Refined	2.10 @ 2.20¢	2.00 @ 2.10¢
Shell	2.20 @ 2.30¢	2.20 @ 2.30¢
Flange	2.75 @ 3.00¢	2.40 @ 2.50¢
Fire-Box	3.75 @ 4.00¢	2.60 @ 2.80¢

Structural Material.—The demand shows no improvement, and some of the mills are running very short of work. There is nothing of special importance on the market at present, so that there is not much room to hope for improvement in the immediate future, although it is understood that there is a vast amount of work to come on the market some time during the spring or summer months. Prices are irregular, but nominally about as follows: Angles, 1.90¢ @ 2¢; Universal Plates, 1.90¢ @ 2¢; Sheared Plates, 1.85¢ @ 1.90¢, and in some cases lower prices, to about $\frac{1}{10}$¢ more, for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Business has been unusually dull of late, but there is a better inquiry, some little improvement in the demand, and with further inquiries manufacturers are beginning to feel more encouraged. Prices are nominally unchanged, although for immediate deliveries very liberal concessions have been made in recent transactions. Best makes for small lots are quoted about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.05¢
Best Refined, Nos. 21 to 24	@ 3.10¢
Best Refined, Nos. 25 to 26	3.20¢ @ 3.25¢
Best Refined, No. 27	3.40¢ @ ....
Best Refined, No. 28	3.50¢ @ ....

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3⅛¢
Best Soft Steel, Nos. 21 to 24	3⅛¢ @ ....
Best Soft Steel, Nos. 25 to 26	3¼¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material.—There is not much demand at present, although Steel Scrap being scarce commands full prices. Other descriptions are quiet, but mostly held at about the following prices: Iron Rails, $21.50 @ $22, delivered; Steel Rails, $16.50 @ $17.50; Heavy Steel Scrap, $17 @ $18; No. 1 Railroad Scrap, $19.50 @ $20, Philadelphia, or for deliveries at mills in the interior $20 @ $21, according to distance and quality; $14.50 @ $15.50 for No. 2 Light; $14 @ $14.50 for best Machinery Scrap; $13.50 @ $14 for ordinary; $14.50 @ $15.50 for Wrought Turnings; $10 @ $10.50 for Cast Borings, and nominally $23 @ $25 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—Business is extremely dull, and prices weak and irregular. There is no change in the official discounts, but 5 and 10 % extra discounts are easily obtainable on desirable orders:

Butt-Welded Black	57½ %
Butt-Welded Galvanized	47½ %
Lap-Welded Black	67½ %
Lap-Welded Galvanized	55 %
Boiler Tubes, 2½ inch and under	52½ %
Boiler Tubes, 3 to 6 inch	60 %
Boiler Tubes, 7 inch and larger	55 %

Witherbees, Sherman & Co., proprietors of Cedar Point Furnace, at Port Henry, N. Y., after operating a Ball-Norton magnetic ore separator for seven weeks past, have placed orders for a second separator of that type, to be erected at Mineville, N. Y. The Magnetic Iron Ore Company of Benson Mines, N. Y., after operating three Ball-Norton separators for one year, have just put in the fourth.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, January 27, 1892.

There have been further evidences of improving trade during the past week, but so far they are still confined mainly to raw material. Finished Iron and Steel have not yet shown the activity or hardening of prices fully expected by this time. Manufacturers, however, are covering their requirements so far ahead that they must have better reason for their action than has been made public.

Pig Iron.—Further heavy sales of local Coke Pig Iron have been made for delivery throughout the year. The prices made were about the same to last week, being slightly under our quotations, which are for carloads to 100-ton lots. The market is, therefore, no stronger, despite the active demand. In fact, it is claimed that the low prices now being made and the long deliveries allowed by sellers have caused the demand. The situation is now satisfactory to the manufacturers, all of whom are complaining of the terms which they have of late been obliged to make. The heavy business booked by all the local makers must by this time have given them such a substantial basis of trade that better prices are likely to be established at any time. All depends on the local companies. If they get together they can secure a substantial advance. Southern competition has been pretty thoroughly eliminated of late, from causes previously set forth. Soft Irons are the subject of some inquiry, and contracts may shortly be placed for them if deliveries can be agreed upon, but ordinary Southern Foundry grades are neglected. Lake Superior Charcoal is firm, but there is very little doing in it. Inquiries are constantly coming up, but they are slow to develop in business. High silicon Silvery Irons have been in good demand, with sales of round lots. Quotations are as follows:

Lake Superior Charcoal	$17.00 @ $17.50
Local Coke Foundry, No. 1	15.00 @ 16.00
Local Coke Foundry, No. 2	14.50 @ 15.00
Local Coke Foundry, No. 3	14.00 @ 14.50
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15.75 @ 16.00
Southern Coke, No. 2	14.75 @ 15.00
Southern Coke, No. 3	14.00 @ 14.25
Southern, No. 1, Soft	14.75 @ 15.00
Southern, No. 2, Soft	14.00 @ 14.25
Southern Gray Forge	13.75 @ 14.00
Southern Mottled	13.25 @ 13.50
Tennessee Charcoal, No 1	17.50 @ 18.00
Alabama Car Wheel	19.50 @ 20.50
Coke Bessemer	16.50 @ 17.00
Hocking Valley, No. 1	17.25 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Spiegeleisen—Is unchanged both as to demand and price.

Finished Iron and Steel.—Bar Iron is dull and inclined to weakness, but this is regarded indifferently by manufacturers. They report heavy business from other localities and think from the way their mills have lately been loading up that the Chicago buyers will soon find they have lost control of the market. Quotations are close to 1.70¢, half extras, Chicago, but heavy buyers claim they are getting considerably lower offers. Contracts for Structural Material are still pending. More heavy orders for Sheets have been placed for spring delivery and prices are steady. Galvanized Iron is more active than ever, at unchanged prices. Plates are very quiet, with little chance for mill business at present, in view of the heavy stock now carried here. Merchant Steel is unchanged.

Track Supplies.—Steel Rails are in good demand, with a fair amount of business being booked and prospects bright for more. Prices are firm at $32 and upward, according to quantity. Splice Bars of Iron or Steel are quoted at 1.80¢, Spikes, 2.20¢ @ 2.25¢, and Track Bolts, 2.50¢ for Square and 2 65¢ @ 2.70¢ Hexagon Nut.

Old Rails and Wheels.—Old Iron Rails are in active demand, with sales reported of several thousand tons at $22.25, or close to that figure. Old Steel Rails are quiet, with $14.50 asked for mixed lots Car Wheels are again a shade stronger under an improved demand; sales are reported at $16.25 @ $16.50 to consumers.

Scrap.—Heavy sales of Wrought have been quietly made to large consumers at outside points. Some demand exists for Borings, Turnings and Steel, while Cast is active. Quotations are as follows, per net ton: No. 1 Railroad, $18.50; No. 1 Forge, $17.50; Horse Shoes, $18; Car Axles, $22; Fish Plates, $20; No. 1 Mill, $12.50; Pipes, $11.50; Sheet Iron, $8; Cast Borings, $7; Wrought Turnings, $10; Axle Turnings, $12; Machinery Cast, $12; Malleable Cast, $9; Stove Plate, $9; Mixed Steel, per gross ton, $11.75; Coil Steel, $15.50; Leaf Steel, $17.75.

Metals.—Copper is looking up; inquiries are large. Carload lots of Lake quoted 11½¢, and Western 10⅞¢. Spelter is quiet and quoted at 4.50¢, but makers are a little inclined to weakness. The failure of Everett & Post will not hurt the metal market in any way. The firm has the sympathy of the trade and hopes are expressed that the Chicago house at least will be able to resume. In Pig Lead no business is being done, except that which actual requirements necessitates. This market has been flat, and while some inquiry exists no sales of consequence are reported at the asking price of 4¢, which is firmly adhered to.

Iroquois Furnace Company notify us that they desire to correct statements made in issue of the 21st in regard to sales of the product of their furnace. Messrs. Dunham, Keely & Hagerty, successors of Charles Himrod & Co., will continue, as formerly, with the sale of Iroquois Iron in such territory as they have been heretofore operating until the expiration of their contract with the furnace company.

Chamberlain, Turney & Co., dealers in Pig Iron, at Columbus, Ohio, have favored us with one of the pretty souvenirs they have recently distributed among their customers. It is a gilt-edged, leather-bound pocket memorandum book, containing calendars for 1892 and 1893 on the inside covers, and having the firm's name stamped in gold on the outside. Their Chicago office is in the Rookery Building, and St. Louis office in the Bank of Commerce Building.

The Corning Steel Company have decided to locate their sheet mill at Hammond, Ind., but the office will be in Chicago, probably in the Phenix Building. The capital stock is $250,000, fully paid up. A building 300 feet long by 160 feet wide, of brick with an iron roof, will be built. A 20-ton open-hearth steel furnace will be operated in connection with the rolling mill, which is expected to have a daily capacity of 50 tons. All the machinery will be of the latest design and the company's aim will be to produce only the highest grade of goods. The Sterling Company of Chicago will furnish the boilers, and the Boss Foundry and Machine Company of Fort Wayne, Ind., the engines. It is expected to have the mill in operation by July 1. This will be an important addition to the industries of Chicago and vicinity.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, January 26, 1892.

Pig Iron.—The most notable event of the week was a reaction in Bessemer Iron, sales having been reported at a reduction of 25¢ @ 50¢ ℔ ton. The reaction was generally unlooked for. The only way to account for the same is that the production is in excess of consumption. Forge Irons are also weaker, while in Foundry grade there has been an increased business the past few weeks, but prices show no improvement. There is not much Iron of any kind being offered here from the Shenango or Mahoning Valley districts. We quote prices as follows:

Neutral Gray Forge	$13.25	@ $13.50,	cash.
All-Ore Mill	13.75	@ 14.25,	"
White and Mottled	12.50	@ 13.00,	"
No. 1 Foundry	15.50	@ 16.00,	"
No. 2 Foundry	14.50	@ 15.00,	"
No. 3 Foundry	14.00	@ 14.25,	"
Bessemer Iron	15.50	@ 15.75,	"
No. 1 Charcoal Foundry	21.00	@ 21.50,	"
No. 2 Charcoal Foundry	20.00	@ 20.50,	"
Cold-Blast Charcoal	25.00	@ 27.00,	"

It is but proper to note that the sales of Bessemer reported at $15.50 were for immediate or near-by delivery; also that city made Forge Irons are held at $13.50, cash, and so far as we are advised there have been no sales below that price; this means deliveries to the mill of the buyer here, which takes from 20¢ to 30¢ ℔ ton from the furnaceman, who has to pay the same. Now that Carnegie & Co. and the Illinois Steel Company have made large contracts for Ores it is probable that other furnace companies will do likewise, as they usually wait to see what the two first named companies will do.

Muck Bar.—There has been a little more business the past week; sales reported of 2000 tons in three different lots at $25.75 @ $26, cash; there was one lot of 1000 tons at $25.75, which is regarded as a very low price.

Ferromanganese.—Sales of domestic 80 % at $63 @ $63.50. Carnegie & Co. have this district well in hand.

Manufactured Iron.—There is a very good demand reported for Bar Iron, but continued complaint in regard to prices. We continue to quote first-class city-made Bars at 1.70¢ @ 1.72½¢, 60 days, 2 % off for cash. Bars made from Old Rails, half extras, quotable at 1.60¢ @ 1.62½¢. Plate and Tank Iron, made from first-class Muck Bar, 2¢ @ 2.10¢; and No. 24 Sheet is quoted at 2.60¢, 60 days, 2 % off for cash. Skelp Iron continues very low, 1.60¢ for Grooved and 1.80¢ for Sheared, four months, 2 % off for cash; an increased demand is looked for before long, and prices have certainly reached hard pan.

Nails.—There is an increasing demand for Cut Nails; some large contracts have recently been made in the Wheeling district at unchanged prices—$1.55 @ $1 60 for 30¢ to 35¢ average, 60 days, 2 % off for cash, f.o.b. at factory. There are only some two or three factories in operation in the Wheeling district, hence production there has fallen off largely as compared with what it was some years ago. There has been considerable activity in Wire Nails, some good-sized contracts having been closed, and it is evident that large buyers are not afraid to buy at present prices. We continue to quote at $1.65 @ $1.70, f.o.b. at factory, for near-by delivery, 60 days, 2 % off for cash.

Old Rails.—Dullness continues to obtain, but an improved demand for Iron Rails is expected from consumers west of here. We continue to quote Iron Rails at $22.75 @ $23, and Steel at $17 @ $17.50 for short and long pieces. The supply of Iron Rails is growing less and less, but there is still enough and to spare.

Wire Rods.—While we are not advised of any sales, there is said to have been considerable inquiry developed the past week, from the West chiefly, and it is expected that considerable business will be done in the near future. We continue to quote $34.50 to $35, cash, f.o.b. a maker's mill. A large, new Rod mill at Chicago, which was expected to be in operation some time ago, is yet unfinished, and consumers who expected to get their supply from the new mill are now on the market elsewhere wherever they can be suited in deliveries.

Billets and Slabs.—While there has been no change in price, $25, cash, f.o.b. at maker's mill, business continues quiet, the recent sharp advance having, for the time, curtailed the demand. However, as noted in our last report, the mills both here and at Wheeling are well sold up, and are not, for the time, particularly anxious for business, and while this continues to be the case there is not much danger of a cut in price.

Barb Wire.—Prices remain unchanged at $2.45 for Painted and $2.95 for Galvanized, f.o.b at factory in the Pittsburgh or Cleveland districts. It is stated on good authority that the factories outside of the syndicate are all supplied with orders and that they are holding stiff at the syndicate prices.

Structural Material.—There is not much new business in sight as yet, but it is expected that there will be next month, as there usually is in February. Plans and specifications are now being placed in readiness here for some large buildings, and the same is no doubt the case elsewhere. Prices remain unchanged, but it may be stated in this connection that manufacturers regard our quotations as being very close, and are willing to accept the same only for very desirable orders. Beam and Channels, 3.10¢; Angles, 1.90¢ @ 2¢; Tees, 2.25¢ @ 2.35¢; Universal Mill Plate Irons, 1.95¢ @ 2¢; Steel Bridge Plates, 1.90¢ @ 2¢; Refined Bars, 1.75¢ @ 1.80¢.

Steel Plates.—There is an improved demand, but prices remain unchanged, as follows: Fire Box, 3¾¢ @ 4¼¢; Tank, 2¢ @ 2.05¢; Shell, 2.10¢ @ 2.15¢; Flange, 2.35¢ @ 2.50¢.

Railway Track Supplies.—There is a continued steady demand at unchanged prices. Some good sized contracts have been placed recently. Spikes, 2.15¢ @ 2.20¢, 30 days, f.o.b. at makers' works; Splice Bars, 1.70¢ @ 1.80¢; Track Bolts, 2.65¢ with Square and 2.75¢ with Hexagon Nuts.

Merchant Steel.—There is a fair business, which promises to be increased as the season becomes more advanced. No change in prices: Crucible Tool Steel, 6¢ @ 7¢; Bessemer Machinery Steel, 2¢ @ 2.10¢; Toe Calk, 2.30¢ @ 2.50¢; do. Spring, 2.40¢ @ 2.50¢; do. Plow, 2.05¢ @ 2.10¢; Steel Bars, 1.70¢ @ 1.80¢, all f.o.b. at mill, 2 % off on desirable orders.

Steel Rails.—The demand has been comparatively light all this month, but the mills are busy on orders placed during November and December. The price remains unchanged at $30, f.o.b. at mill, for heavy sections.

Old Material.—Business in all kinds of Scrap continues light, while prices remain unchanged: Sales of No. 1 Railroad Wrought Scrap at $19 ℔ net ton; Cast Scrap, $13, gross ton; Rail and Bloom Ends, $17.50 @ $18.

Connellsville Coke.—Furnace Coke, $1.90; Foundry do., $2.30; Crushed do., $2.65, all per net ton, f.o.b cars at ovens.

(*By Telegraph.*)

A meeting of the National Association of Galvanized Sheet Iron Manufacturers was held in the Monongahela House here yesterday. N. E. Whittaker of Whittaker Iron Works, Wheeling, presided, and Henry Whitteley of Philadelphia acted as secretary. The meeting was largely attended and considerable business was transacted. The following resolutions were unanimously adopted:

Resolved, That each member adopt a distinctive trade-mark, to be registered with the secretary and published in *The Iron Age* and *The Metal Worker*, and that after this date, January 26, all Iron shall be branded in addition to any other stencil with the authorized trade-mark of the manufacturers. It was also decided that the weight of No. 10 shall be 91 ounces per square foot and No. 11, 83 ounces; No. 12, 72 ounces, and No. 13, 61 ounces. The list for special wide sheets shall be as follows: No. 19 and lighter, over 36 to 40 inches, inclusive, 2¢; over 40 to 44 inches, inclusive, 3¢; over 44 to 48 inches, inclusive, 5¢, and on No. 16 and No. 18 of the above widths one-half of these extras shall apply. The next meeting of the association will be held in the Hotel Duquesne Pittsburgh, on Tuesday, February 23.

A meeting was held in Wheeling on Tuesday for the purpose of arranging papers looking to the consolidation of the interests of Belmont Nail Company, Wheeling Iron and Nail Company, Benwood Iron Works and Wheeling Steel Works. A committee was appointed to appraise the value of these plants and report at a meeting to be held at an early date. The consolidation of these concerns is now an assured fact, as stockholders are heartily in favor of the consolidation. The report that the Riverside Iron Works was included in the consolidation is without authority and untrue. The new concern, when organized, will be one of the largest Iron, Steel and Nail manufacturing concerns in the country.

The Association of Iron and Steel Sheet Manufacturers met at the Monongahela House, Pittsburgh, Tuesday. J. G. Battelle, president of the Piqua Rolling Mills Company, presided, and W. C. Cronemeyer of the United States Iron and Tin Plate Mfg. Company, Pittsburgh, acted as secretary. W. S. Duncan of the Canonsburg Iron and Steel Company was elected treasurer. About ten firms were represented at the meeting, which was in session several hours. This association has taken up the question of wages paid in the different sheet mills of the country, and an attempt will be made to equalize the wages paid in the different mills. At the present time the difference in wages paid in sheet mills is quite large and an attempt will be made to have a uniform price for the same kinds of work in all different mills. For this purpose four committees were appointed to gather information on the subject and present it at the next meeting of the association. A committee was appointed to represent the Sheet Bar mills, one for the fire-bed mills, one for the Steel Sheet mills and one for Tin Plate mills. It is the intention of the Sheet Iron and Sheet Steel men to take up this question with the Amalgamated Association when the time comes for the next scale to be formulated. Prices were not touched

in any way. The next meeting will held in Pittsburgh on February 23.

Chess, Cook & Co., manufacturers of Soft Steel Stamping and Tack Plates and proprietors of the Central Expanded Metal Company of Pittsburgh have dissolved partnership, the dissolution taking effect on January 23, Geo. R. Lunowan and Thos. McKay Cook retiring. The business will be continued at the old location by Henry Chess, Walter Chess and Harry B. Chess, under the firm name of Chess Bros.

The Pittsburgh office of the Washburn & Moen Mfg. Company, formerly located in the Lewis Block, in that city, has been removed to 26 Seventh avenue, Pittsburgh, where a warehouse has been secured, and it is the intention of the firm to carry a full stock of Wire goods made by them.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, January 27, 1892.

American Pig.—The event of the week has been the announcement by the Thomas Iron Company of a reduction in the price of Foundry Irons, the price having been made $17.50 for No. 1 and $16 for No. 2. B. G. Clarke, the president of the company, states that about 10,000 tons have been booked at that figure. Other sellers, both of Northern and of Southern Irons, report the market very quiet. We quote Northern brands, $16.75 @ $17.50 for No. 1; $15.75 @ $16 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Iron sells at $15.75 @ $17 for No. 1; $15.25 @ $16 for No. 2 and $13.75 @ $14.25 for Gray Forge.

Spiegeleisen and Ferromanganese.—Aside from a small quantity of domestic 10 to 12 % which is offering, the market is very dull. We quote nominally for foreign, 10 % to 12 %, $23 @ $23.50; 20 %, $26.75 @ $27, and Ferromanganese, $62.50 @ $63 50.

Billets and Rods.—The market is lifeless, both in Soft Steel Billets and in Wire Rods. The latter may be quoted $36.50 @ $37, tidewater.

Manufactured Iron and Steel.—The principal event of the week has been the closing of contracts for the material for two vessels which the Union Iron Works of San Francisco will build for the Pacific Mail. One of the contracts for 2500 tons of material has been taken by a mill in eastern Pennsylvania, while the other of like amount has been captured by a Pittsburgh producer. It is understood that the price for the Ship Plates was 1.85¢ at mill. Steel makers for bridge purboses are considerably agitated over the fact that A. P. Boller, the engineer of the McComb's Dam Bridge, has introduced a clause in the specifications limiting the Steel to be furnished to Open Hearth Acid Steel, although he does prescribe physical tests. Considering the fact that both Open Hearth and Bessemer Basic and Acid Bessemer have been largely used for bridge work in this country, this attitude is a surprise and does not seem justifiable, since tests are called for. The bridge in question was let some time since to the Union Bridge Company, but is now to be advertised again in about a week. It calls for a considerable quantity of structural material. In Bars some round orders have been placed lately, and an advance of $\frac{1}{10}$¢ has been secured when the buyer secured the privilege of drawing the Iron from time to time up to July 1. Bids for the power house of the Broadway line are to be opened this week. We quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.9¢ @ 2.1¢ for Tank; 2.15¢ @ 2.30¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.60¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.20¢, delivered. Steel Axles, 2¢ @ 2.2¢, and Links and Pins, 2.1¢ @ 2.20¢; Steel Hoops, 1.95¢ @ 2.05¢, delivered.

Merchant Steel.—We quote Hot Rolled Shafting 1.95¢ @ 2.10¢; Machinery, 2.05¢ @ 2.15¢; Tire, 2.10¢ @ 2.25¢, and Toe Calk, 2.25¢ @ 2.35¢, delivered.

Track Material.—We quote Spikes, 2.10¢ @ 2.20¢; Angles, 1.70¢ @ 1.75¢ and Bolts, 2.65¢ @ 2.90¢, delivered.

Steel Rails.—Eastern mills report very little new business, the only contract to be placed within a day or two being one for a 3000-ton lot for the Providence road. The market remains at $30, at mill, in the East. Very large transactions are looked forward to in Girder Rails as the result of the conversion of 150 miles of horse car lines in Brooklyn into electric lines.

Gustavus C. Darlington, well known in the Eastern Iron trade, has established himself at 206 Broadway as furnace agent. He has assumed the sole agency for the product of the Mohawk furnace in northern New Jersey and eastern New York, the brands being Hercules (Strong) and Arnold (Scotch).

From Boston comes the announcement that George P. Bullard, 125 Milk street, has been appointed New England agent of J. Painter & Sons of Pittsburgh, makers of Hoop and Band Iron, Hinge Iron, Beveled Shaft Irons and Small Rounds.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, January 27, 1892.

Pig Iron.—The general outlook for Pig Iron is not especially discouraging, but it seems to be considered by buyers that there is nothing to be gained by being in haste about purchasing, and there have been no large transactions during the week. Scarcely enough has been done to indicate the tone of the market, but there is no doubt that buyers could obtain an abundance of Iron at current quotations if they would only make bids. At the same time many of the furnaces are out of the market as sellers at existing prices. There is a fair volume of consumptive orders which, in the aggregate, are fairly satisfactory, although by no means large. The recent orders for new cars and the repair of rolling stock has made a demand for Car Wheel Iron of liberal proportions, and this is expected to lead to an increased consumption of Coke Iron at an early day. The increased cost of Lake Superior Ore, which is interpreted to mean an advance of 75¢ ℔ ton in Bessemer Pig Iron over last year, certainly means that an improvement in trade is anticipated, and if it pans out as expected, none will rejoice more than the Southern furnaces, who could then hope to get an advance on their production that would yield them a small profit. The fact that stocks owned by the furnaces of the country are practically no larger than a year ago shows that consumption equaled production in the year 1891, and the outlook is favorable for an enlargement in the use of Iron in all directions during the current year. Quotations are unchanged, as follows:

Foundry.	
Southern Coke, No. 1	$14.75 @ $15.00
Southern Coke, No. 2	13.75 @ 14.00
Southern Coke, No. 3	12.75 @ 13.00
Ohio Soft Stone Coal, No. 1	16.25 @ 16.50
Ohio Soft Stone Coal, No. 2	15.50 @ 16.00
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	20.00 @ 21.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00
Forge.	
Gray Forge	12.25 @ 12.50
Mottled Neutral Coke	12.00 @ 12.25
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	19.75 @ 20.00
Lake Superior Car Wheel and Malleable	18.75 @ 19.00

Detroit.

WILLIAM F. JARVIS & Co., under date of January 25, 1892, report as follows: With one or two exceptional trades, the same moderate business is being transacted at unchanged figures. Small orders are more frequent than for some time past, indicating increased activity among the smaller foundrymen, and as these have come from various points in the State trade may be reported as generally better, and every indication of this nature, however small, causes a more hopeful feeling among the furnacemen. The buyers, too, are becoming more and more convinced each week that higher figures must soon be seen, and in consequence some inquiry for a considerable quantity of Gray Iron exists, which, it is expected, will be satisfied during the coming week. While these inquiries are largely for Southern Iron, a considerable portion of Ohio Softeners, and also Foundry Iron, will probably be bought. The exceptions noted refer to two round lots of Lake Superior Charcoal metal which were purchased by car-wheel men at the ruling prices and for reasonably quick delivery. With Ore and transportation adding as it will from 75¢ to $1 ℔ ton to the cost of not only Coke Iron, but also Charcoal made from Lake Ores, and realizing that hardly a new dollar was obtained for an old one on last year's deals for Charcoal metal, it is only logical to expect, notwithstanding a large stock on hand, that prices must rule higher, at least to the extent of the advance in cost, and it is also safe to predict that a very much heavier demand will exist from both malleable and car-wheel makers, which may send prices up even a notch or two higher. We repeat our list of figures as follows:

Lake Superior Charcoal, all numbers	$17.00 @ $18.00
Lake Superior Coke, Bessemer	16.50 @ 17.00
Lake Superior Coke Foundry, all ore	17.50 @ 18.00
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery.	18.25 @ 18.75

Metal Market.

Copper.—There has been a further depreciation in the market value of Ingot Copper, the result of increased offering from one source and other and continued restricted outlet. Current report has it that manufacturers of Copper and Brass goods are well supplied with orders for their various products, but the demand for electrical supplies has been somewhat disappointing thus far, and, in the face of very fair export movement, production has run ahead of the outlet sufficiently to cause more or less burdensome accumulation of supplies. The leading producers, through their representatives, keep up the farce of endeavoring to make it appear that 11¢ is the price of Lake Superior Ingot where any considerable quantities are involved, but more metal than any interest seem to have use for is offered at down to 10.80¢,

prompt delivery, and even 10.70¢ has been reached without stimulating action on the part of consumers or jobbers, although bids of 10.85¢ are said to have been made on fair-sized lots for delivery two or three months hence. To all accounts the bulk of business has been made up of parcels of a few carloads, chiefly at prices within the range of 10.70¢ @ 10.80¢. Casting brands are quite as slow, if, indeed, not more difficult of sale than Lake Ingot and 10½¢ stands as full outside valve even for small lots, while 10⅜¢ would doubtless be accepted for good-sized lots for delivery in the near future. Shipments of Matte to Europe on old contracts are still of quite liberal volume, and fair quantities of Fine Copper are going out also but new export movement is of very narrow proportions, and the latest advices from the foreign markets are not encouraging by any means. In short, the statistical position at present is rather weak.

Pig Tin.—Since last report prices for Straits Tin have receded about ¼¢ ℔ lb on actual sale, and the local market has ruled relatively lower than London during the interval. In short, the market has suffered more or less depression, and the indications are that affairs have turned for the worse rather than for the better since the speculative element resorted to the childish idea of attempting to hide facts with a view to hoodwinking the out of town trade about actual market values. In this market Straits has been sold as low as 19.60¢, net cash, in 10-ton lots, but even lower prices were made to the out of town trade a few days ago, when London advices were weakest. More recently 19.70¢ was paid by a local operator or two, who were evidently stimulated by a slight reaction in London, and the market at present is showing rather better tone. Purchases for consumption and trade account this month, it is figured out, run somewhat ahead of the movement during January last year, but stocks in first hands are still not only heavy all told, but somewhat burdensome, and the quantity afloat is quite large, insuring liberal supplies for some time to come.

Pig Lead.—Local transactions during the past week involve a total of only a few hundred tons and consumers still manifest indifference of a pronounced character. Corroders have purchased nothing to speak of, other consumers have bought sparingly and outside of those interests the buying has been confined almost wholly to single carload lots. In the face of this condition of affairs and advices of depression, with a further decline in prices in the European market, sellers have made more or less display of firmness, quoting 4.20¢ for Common Lead and 4¼¢ for Chemical. This position is attributed in a good measure to the belief, or assumed belief, that the imposition of a duty upon Ores shipped out of Mexico would limit the movement of Lead Ores from that quarter. The fact, however, is that the duty applies solely to Ores containing 100 ounces of Silver to the ton, and the only effect upon Lead Ores is to probably cause some delay in first shipments that have to undergo scrutiny under the new Mexican laws. Foreign Lead may be laid down here at about 4.32½¢ from the European markets, in which quarter supplies are, to all accounts, unusually heavy.

Spelter.—The suspension of Everett & Post, who are understood to have been large holders of Spelter, has thus far had no pronounced effect upon the market for the metal. In any event there is no evidence of greater pressure of stock for sale here or in the West, and prices are no lower than they were a week ago. If anything, the demand from consumers is rather better and of sufficient volume to at least check any further downward movement in prices for the time being. Western product is quoted at 4.60¢ @ 4.65¢, according to brand and size of lot.

Antimony.—The jobbing distribution is fair, but little movement of round lots is going on. Prices are still somewhat irregular, with 11¼¢ @ 12¢ quoted for Hallett's and 15¾¢ @ 16¢ for Cookson's on the spot.

Tin Plate.—There is no distinctively new feature in the market. Fair orders are still being placed by can makers and canners of food products for 100 lb and lighter Cokes for delivery from February to July chiefly on the basis of $5.20 @ $5.25, here, for 100-lb Bessemers. There is also a fair degree of interest in Ternes, the spot supply of which is moderate. Otherwise the movement appears to be of strictly routine character and chiefly at the prices that have ruled for some little time past. In spot goods there is about the usual seasonable movement. We quote: Coke Tins—Penlan grade, full weight IC, 14 x 20, $5.25; J. B. grade, do., $5.35; Bessemer do., $5.30; Siemens Steel, $5.40. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.70; Siemens Steel, IC basis, $5.80; IX basis, $6.85. IC Charcoals — Melyn grade, $6.50; for each additional X add $1.60; Allaway grade, $5.75; Grange grade, $5.90 @ $5.95; for each additional X add $1.20. Charcoal Ternes—Worcester, 14 x 20, $5.75; do., 20 x 28, $11.45; M. F., 14 x 20, $7.40; do., 20 x 28, $15; Dean, 14 x 20, $5.55; do., 20 x 28, $10.60; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10.20; Mansel, 14 x 20, $5.40; do., 20 x 28, $10.45; Alyn, 14 x 20, $5.45; do., 20 x 28, $10.50; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11.00. Wasters—S. T. P. grade, 14 x 20, $5.10; do., 20 x 28, $10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, $9.75.

Coal Market.

The Anthracite Coal market is unsettled, pending disturbances growing out of the Coxe decision, Reading's move to secure a larger pro rata, the Poughkeepsie Bridge negotiations and the open cut made by the Lehigh and Wilkesbarre Company in reducing prices an average of about 50¢ ℔ ton. Buying is on narrow limits until the future shall be more clearly seen. The Lehigh and Wilkesbarre quoted Grate Coal at $3.25 a ton, f.o.b. New York; Stove, $3.50; Nut, $3, and Egg, $3.25. This is an average cut of about 50¢ a ton. It is notorious that the cut referred to is only an avowal of a course that had become almost the uniform practice, so that as a matter of business the company prices have for a few weeks past ranged only about 5¢ @ 10¢ higher than those of independent concerns who were a law unto themselves. Of course affairs must soon drift into regular methods, otherwise business is impracticable. The week's production was 706,000 tons. Total for year 1,377,568 tons, a decline as against same date last year of 362,936 tons. The Reading tonnage for the week was 210,000 tons. Pennsylvania Coal tonnage, 294,148 tons; Coke, 116,727 tons. Coal rates from Philadelphia to Boston, 80¢. The Soft Coal trade deliveries are active on old contracts.

The Coal business of the Lehigh Valley Railroad is shown by the annual report:

During 1891, 10,332,954 tons of Anthracite Coal were carried, against 9,101,824 tons in 1890, an increase of 1,231,130 tons. In 1891, 265,847 tons of Bituminous Coal and Coke were hauled, against 386,358 tons in 1890, a decrease of 120,511 tons. The unequal demand for Anthracite Coal largely restricts the production during at least two-thirds of the year, while the producing and transportation capacity and equipment must be maintained equal to the requirements of the active season. The effect of such restrictions is illustrated by the statement that although there was an increase in Anthracite Coal marketed during the year 1891 of more than 4,500,000 tons, out of 55 collieries owned by or operated in the interest of this company, six were idle during the entire year, and those operated by the Lehigh Valley Coal Company in the Wyoming region worked only 142 days, and those in the Lehigh and Mahanoy regions only 162 days.

Cleveland.

CLEVELAND, January 25, 1892.

Iron Ore.—Sales of Ore for delivery in 1892 are going merrily on, although not quite so freely as one week ago. High-grade Ores are certainly selling with remarkable freedom. The Ores from the Pittsburgh and Lake Angeline mines—about the most desirable grade of Ore obtainable—are in big demand, and the company are keeping up their reputation for paying enormous dividends. The most important feature of to-day's developments is the practical establishment of lake freights from upper ports on this scale: Ashland, $1.25; Marquette, $1.15, and Escanaba, $1; all to Lake Erie ports. Very little non-Bessemer Ore has thus far been sold, although it is announced to-day that the South Buffalo and Queen mines have made sales of non-Bessemer on the basis of $3.85 @ $3.90 for Ore that sold last year at $3.50. Probably not over 200,000 or 300,000 tons of Ore have been sold during the past week, and a few thousand tons of this amount have been Mill Ore, but the non-Bessemers will not really take a place in the market for a few weeks to come. Sales of high-grade Bessemer Ores at an average advance of 35¢ ℔ ton over last season's rates are announced. This would mean about $4.85 for Gogebics and Menominees, laid down on the docks at Cleveland, Ashtabula, Freeport, Erie and other lake ports. Eastern furnacemen are beginning to buy, but not in very large quantities thus far. Nearly all the Ore sold from the Lake Superior region is bought in a district that does not extend beyond the limits of a ½-mile circle with the Pery-Payne Building of this city as a pivot. A thorough canvass of that district to-day establishes the fact that last week's announcements of an average advance over last season of 35¢ @ 40¢ ℔ ton was absolutely authentic. The sales made during the past week have been at an average advance of 35¢ ℔ ton over 1891 prices; this advance including the increased cost of transportation. Ore men believe to-day that from 8,500,000 to 9,000,000 tons of Lake Superior Ore will be asked for this year.

Pig Iron.—Although business is not very good, dealers seem to be remarkably hopeful. The market does not exhibit much activity. Some furnacemen are sold ahead and some are out of blast. The latter have plenty of Ore and are in no hurry to make Iron at the present prices. It is said to-day that Bessemer has been sold here during the past week as low as $15. It is certainly not in demand at much higher figures now. Forge and Silvery Irons are rather more in favor.

Old Rails.—Old Americans at $22 @ $22.50 are in moderate demand.

Manufactured Iron.—The demand is somewhat better. Common Bar at 1.65¢ is selling quite freely. Sheets are as scarce as ever and Structural Iron is in good demand.

Nails.—Very little is said to be doing in Cut Nails at $1.65 @ $1.70. There is,

however, a better demand for Wire Nails at $1.70 @ $1.75.

Scrap.—The market is not very active, but is based on $18.75 @ $19 for No. 1 Railroad Wrought.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, January 25, 1892.

Pig Iron.—Business does not improve very rapidly. Inquiries are more plentiful, and the outlook for an increased trade seems to grow brighter daily. But immediate business is not forthcoming, and as furnacemen cannot live on prospects, there is considerable complaining heard. Large buyers are pretty generally supplied for some months ahead, and the smaller trade are buying in small quantities as their needs require. Sales of Southern No. 2 Soft are reported on the basis of $10, f.o b. Birmingham. Gray Forge is inclined to weakness, and $9.75, f.o.b. furnace, is a general quotation, and for round lots this price could no doubt be shaded. Prices are susceptible to shading throughout the entire list, and until the demand assumes much larger proportions than at present, prevailing higher prices are out of the question. For ordinary quantities we quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.25 @ $15.50
Southern Coke, No. 2 Foundry,	14.25 @ 14.50
Southern Coke, No. 3 Foundry,	13.50 @ 13.75
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.75 @ 18.75

Bar Iron.—Mills continue to keep well employed. Car builders are exceedingly busy, and have been liberal buyers for some weeks past. Prices are firming up somewhat, and the prospect for increased business is encouraging. We quote as follows: Car lots, at East St. Louis, 1.70¢ @ 1.75¢, half extras; small lots from store, 1.85¢ @ 1.90¢, according to quantity

Barb Wire.—Some activity is noted in this department, but jobbers are not overloaded with orders by any means. Prices continue without change and are well maintained. We quote as follows: Painted, $2.70; Galvanized, $3.20; terms, 60 days, or 3 % discount for cash in ten days.

Wire Nails.—The firm feeling noted in last week's report continues. There are still a few odd lots which are offered cheap, but prices to-day are stronger than for some weeks past. Jobbers quote $2.05 @ $2.10; car lots from mill command $1.85 @ $1.90.

(*By Telegraph.*)

Metals.—The movement in Pig Lead toward lower prices has been temporarily checked more by a lack of demand than a strengthening of the market. There have been no sales of any moment to report at this writing. A sale of 500 tons at 3.90¢ was consummated less than a week ago, since which the market has relapsed into innocuous desuetude. The market is in a peculiar condition, and is likely to turn either way without warning. At the moment indications point to lower prices. Spelter is in the same condition as Pig Lead, and offerings are freely made at 4.30¢, but for some reason consumers are not at present disposed to touch the market.

Everett & Post, St. Louis, Mo., dealers in Pig Lead and Spelter, made an assignment on the 22d inst. They expect to make a satisfactory arrangement with their creditors and to shortly resume business.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, January 27, 1892.

In Scotch warrants there has been a decline to 42/, or 5/ fall from the price held for some time by the London syndicate. This fall is attributed to uneasiness caused by the fact that Scotch makers are placing more Iron in store, owing to the profitless condition of current trade. The market thus appears to be in poor form, although the regular returns show only 2000 tons increase in the stock in Connal's stores, the total of which is now 505,000 tons. Cleveland warrants have been more or less depressed by the break in Scotch, and sold down to 36/6. The stock in Connal's stores is 158,000 tons. Glasgow merchants have sold heavily of Hematite warrants, under the effect of which prices dropped to 46/7½. The general market is at present in a very unsettled condition.

Under the influence of some pressure to sell for early delivery prices of Pig Tin for prompt delivery receded to £89. 10/ on Friday. The selling was prompted chiefly by heavy Straits shipments. Latterly the offering has been smaller, and the market has been steadied at an advance of about 7/6 from the lowest point.

Notwithstanding good forward buying for French account and more or less covering of short accounts by the "bear" interest, prices for Copper have receded under the weight of steady pressure to realize by numerous holders who were more or less alarmed over reports of expected increase in supplies from America. Merchant Bar prompts sold down to £44. 12/6 on Tuesday, making a decline of about £1 for the week.

The Tin Plate market has undergone very little change. American inquiries are numerous, particularly for light weights and specials, but, owing to low limits of prices, only a fair business has resulted. Makers are firm. The Treforest Company have restarted seven and the Gwendraeth Company five mills.

Scotch Pig Iron.—There is no marked change in home or export demand, and prices still tend in buyers' favor.

No. 1 Coltness,	f.o.b.	Glasgow	55/6
No. 1 Summerlee,	"	"	53/6
No. 1 Gartsherrie,	"	"	53/6
No. 1 Langloan,	"	"	54/
No. 1 Carnbroe,	"	"	48/
No. 1 Shotts	"	at Leith	55/6
No. 1 Glengarnock,	"	Ardrossan	54/6
No. 1 Dalmellington,	"	"	49/
No. 1 Eglinton,	"	"	48/6

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Cleveland Pig.—In sympathy with weakness in warrants, prices for Makers' Iron are lower, with sellers at 37/, f.o.b., for No. 3 Middlesborough.

Bessemer Pig.—Demand does not improve, and prices are still rather weak, with sellers at 48/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—There has been no further change in prices, and the market remains quiet. English 20 % quoted at 80/, f.o.b. shipping port.

Steel Rails.—Business is still rather slow, but makers' prices are unchanged. Heavy sections quoted £4. 2/6 and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Very little doing and makers still quoting £4 @ £4. 2/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Demand is only fair and former prices are asked. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—The market is dull and unchanged. Bessemer quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is no change in the demand and sellers ask former prices. Tees quoted at £2. 17/6 @ £2. 18/ and Double Heads £3 @ £3. 1/3, f.o.b.

Scrap Iron.—Prices are steady, but there is only a moderate business. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—The market remains quiet and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—No material change in prices, and demand only fair. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	14/3 @ 14/9
IC Bessemer Steel, Coke finish	12/9 @ ....
IC Siemens " " "	@ 13/3
IC Coke, B. V. grade	@ 12/9
Charcoal Terne, Dean grade	@ 12/3

Manufactured Iron.—Business is still on a moderate scale, and prices are irregular, with declines in some instances. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	10	0	@	.....		
" Common "	6	10	0	@	.....		
Staff. Bl'k Sheet, singles	7	10	0	@	.....		
Welsh Bars (f.o.b. Wales)	5	12	6	@	.....		

Pig Tin.—The market closes fairly steady, but quiet. Straits quoted at £89. 17/6 for spot and £90, three months.

Copper.—Buyers still operating carefully, and prices rather weak. G. M. B. quoted at £44. 12/6 for spot, £45. 2/6, three months, and best selected at £49.

Lead.—The market remains dull and prices are rather weak, at £10. 17/6 for Soft Spanish.

Spelter. — Demand fair and prices steadier, at £22. 5/ for ordinary Silesian.

At the annual meeting of the American Protective Tariff League, recently held in New York, the following officers were elected: Cornelius N. Bliss, president; Thomas H. Dudley, first vice-president; Robert P. Porter, second vice-president; Wilbur F. Wakeman, general secretary; Charles Griswold, treasurer. Executive Committee, T. M. Ives, New York; Geo. H. Ely, Ohio; P. C. Cheney, New Hampshire; James Phillips, Jr., Massachusetts; Joseph H. Thropp, Pennsylvania.

It is true that the Riverside Iron Works, at Wheeling, W. Va., will for the present discontinue the manufacture of cut nails, but it is the intention of the company to keep the factory in such shape that operations can be resumed at any time, whenever there is sufficient inducement in the business to warrant their doing so.

HARDWARE.

Condition of Trade.

BUSINESS IN THE East is generally reported to be of moderate volume, the trade apparently being disposed to defer their purchases until a little later. From some parts of the country reports indicate a fairly satisfactory opening of business, but as a rule trade is only moderately active. Prices also remain without important change and the tone of the market has not as yet shown a marked improvement. Goods are generally steady in price and manufacturers are not making efforts to secure sales by their concessions. A conservative feeling characterizes trade as a whole and manufacturers are maintaining prices quite firmly, and at the same time accumulating fair stocks in anticipation of a good season's business. Notwithstanding the fact that money is abundant there is some complaint in regard to collections.

Chicago.

(*By Telegraph.*)

Jobbers report a fair trade in progress. Country merchants are sorting up and an occasional new bill is sold to a firm just starting, so that the aggregate is rather satisfactory than otherwise. Still, the volume of business is less than it was a year ago. Then the demand was running largely to heavy goods, which were selling so cheap by comparison with previous prices that merchants loaded up with large stocks. They were so badly bitten in the subsequent decline that now they are evidently afraid to buy, under the impression that there is no bottom to values. Exceptions are found to this rule, of course, as some jobbers report heavy sales of Wire Nails. Those who refrain from buying are in danger of being caught by advancing prices if they wait too long. It will be seen by information under appropriate headings that the stiffening of prices has already begun. Manufacturers' agents have been more encouraged by the course of events the past week than for several months. Their orders have been swollen to respectable proportions at last and extreme discounts have been cut off. Advances of 2½ to 5 per cent. have been made with apparent ease on articles which were very weak at the beginning of the month. Sheet Copper manufacturers have at last come together and advanced their price. Jobbers quote small lots of Sheet Copper and Copper Bottoms firm at 20 per cent. off the list. Collections are remarkably good.

St. Louis.

(*By Telegraph.*)

An increased trade is noted in Hardware. The mails have brought heavy orders from the West during the past week, showing that salesmen are beginning to get back to work again. Retailers are not buying heavily, but are watching the market closely, and when they observe a soft spot generally order pretty freely. Prices are well maintained in nearly all lines. The spring trade will undoubtedly be large, and merchants are making preparations to handle a heavier trade than they experienced last year. Collections are very good and the general outlook bright.

Notes on Prices.

Cut Nails.—With only a moderate volume of general business, the demand for Cut Nails has been unsatisfactory, and the market continues in a sluggish condition, without any change in prices. The production of the mills, though considerably curtailed, is apparently ample for present requirements. The manufacturers are pursuing a conservative course, avoiding either an accumulation of stock or making further concessions in price in order to induce sales. It is thought that a strengthening in price will only come in connection with a general improvement in business. Quotations are on the basis of $1.45 for round lots at mill, but this figure is sometimes slightly shaded on desirable specifications. New York quotations are $1.55 to $1.60 on dock. Small parcels of Iron or Steel Nails from store are sold at $1.65 to $1.75.

Chicago, by Telegraph.—Steel Cut Nails are in fair demand from manufacturers, but trade is not so active as in Wire Nails. Specifications are being received very freely on contracts, showing that jobbers are doing fairly well in disposing of their stocks. There is no indication yet of higher prices in this locality. Factory lots can still be had at $1.60 to $1.65, Chicago, on 30-cent average. Jobbers are holding firmly to their advanced price of $1.75 for small lots.

Wire Nails—Although the ruling price is regarded as low—are in a more satisfactory condition than Cut Nails. The slight advance in the price recently noted is well maintained, and manufacturers report a fair volume of business, which includes some heavy orders from large purchasers. As a general quotation for round lots at mill $1.70 is named, smaller parcels being sold at an advance of 5 or 10 cents. Small lots from store in New York are held at $1.95 to $2, and at figures ranging from $1.85 to $2 in other markets, the lower figure being owing to their nearness to mill.

Chicago, by Telegraph.—Manufacturers report a decided change in the Wire Nail situation. Plenty of orders have been taken within the past week at an advance of 5¢ to 10¢ over recent extreme prices. Quotations on factory lots are about $1.85 Chicago, and not a few makers are out of the market entirely until a further advance is made. The situation is helped by the stiffening in raw material, which gives manufacturers the needed bracing up. Jobbers quote $1.90 from stock, and are discouraging carload orders.

Barb Wire.—The manufacturers report a fair volume of business, and the tone of the market is improved, notwithstanding the fact that there are rumors current of sales of Wire at slight concessions from schedule rates. There is also abroad in the trade an impression that prices are not unlikely to be slightly advanced in the near future, perhaps by the withdrawal or modification of rebates. The following are the current prices, f.o.b. cars, subject to a discount of 3 per cent. for cash in 10 days:

	Painted.	Galvanized.
Pittsburgh and Cleveland	$2.55	$3.05
Allentown, Cincinnati and Joliet	2.65	3.15
St. Louis	2.70	3.20
Keokuk	2.75	3.25
Lockport, Baker Perfect	2.85	3.35
Lawrence and Omaha	2.90	3.40
San Francisco	3.80	4.30

Chicago, by Telegraph.—The manufacturers have been literally overwhelmed with business for the past few days. If the rush should keep up for any length of time at the present rate they will have more business than they can handle. Heavy buyers have been trying to contract ahead for their season's supply, but the manufacturers are not willing to make extended deliveries. Purchases have been withheld so long on this account that the rush of orders is thus in part explained. The Columbia Wire Company have not advanced their price, but the jobbers are about to cut loose from the schedule and endeavor to get some profit on the business they handle. Salesmen have already been notified by some houses to quote 10 cents, per 100 pounds higher after February—namely, $2.65 carloads and $2.75 small lots Painted, with usual difference on Galvanized.

Hardware Specialties.—The following are the prices of F. E. Kohler & Co., successors to the Chieftain Company, Canton, Ohio, terms; f.o.b. cars, Canton, 60 days from date of invoice, or 2 per cent. discount for cash in ten days:

	Per Dozen.
Little Giant Post Hole Diggers	$18.00
Hercules Post Hole Diggers	14.00
New Champion Post Hole Diggers	9.00
Scheidler Post Hole Diggers	18.00
Superior Saw Sets	7.00
Royal Saw Sets	7.50
Royal Saw Sets (Giant Size)	....
Gem Vegetable Mashers	1.00
Cyclone Can Openers	.90
Lightning Can Openers	1.15
Magic Oscillating Curry Comb	2.00

Steel Alloy Alarm Bell.—We give on another page an illustration of a new Steel Alloy Alarm Bell, manufactured by C. S. Bell & Co., Hillsboro, Ohio, for whom John H. Graham & Co., 113 Chambers street, New York, are agents. These Bells are made in the sizes indicated, and the prices given are for complete Bells, including all the parts shown

in the illustration except the rope. The list is subject to a discount of 50 per cent.:

No.	Diameter bell. Inches.	Weight bell only. Pounds.	Weight bell and mountings. Pounds.	List Price.
530	30	340	555	$70.00
532	32	385	605	80.00
534	34	470	730	95.00
536	36	575	855	115.00
540	40	780	1190	155.00
544	44	1150	1595	205.00
554	54	2125	2985	380.00

Shot.—Under date, January 22, the manufacturers of Shot announce a reduction of 5 cents per 25-lb. bag on Shot. This change is made on account of the reduced price of the raw material. Present quotations on ton lots or over are as follows; terms net 30 days, or 2 per cent. discount for cash in 10 days from date of bill:

Drop Shot up to B, 25-lb. bag	$1.37
" 5-lb. bag	.35
Drop Shot, B and larger, 25-lb. bag	1.62
" 5-lb. bag	.40
Buck and Chilled, 25-lb. bag	1.62
" 5-lb. bag	.40
Dust Shot, 25-lb. bag	2.00
" 5-lb. bag	.45

In smaller quantities than ton lots 5 cents advance per bag of 25 pounds on above prices is charged.

Wringers.—Lovell Mfg. Company, Erie, Pa., for whom W. H. Quinn, 103 Chambers street, New York, is agent, have issued a price-list of their Clothes Wringers, in which, in addition to those with which the trade are familiar, two new Wringers called the Hartford and the Globe are represented. The following are the prices of the goods, subject to a discount of 2 per cent. for cash:

Happy Thought.

Wood-frame Wringers, with patent roller bearings.

Nos. 118 and 120 wring both ways. No. 122 for stationary tubs, turns water either way.

Size Nos.	Size of rolls.	Price per doz.
110	10 x 1¾	$28.00
112	11 x 1¾	32.00
118	12 x 1⅞	46.00
120	12 x 2	54.00
122	12 x 2	66.00

Good Idea.

Eureka style, with patent roller bearings.

Size Nos.	Size of rolls.	Price per doz.
102	10 x 1¾	$25.00
103	11 x 1¾	28.50

New Princess.

Wood-frame Wringers.

Nos. 18 and 20 wring both ways. No. 22 for stationary tubs, turns water either way.

Size Nos.	Size of rolls.	Price per doz.
10	10 x 1¾	$24.00
12	11 x 1¾	28.00
18	12 x 1⅞	42.00
20	12 x 2	50.00
22	12 x 2	62.00

Princess.

Wood Frame Wringers.

Size Nos.	Size of rolls.	Price per doz.
2½	10 x 1¾	$24.00
3½	11 x 1¾	28.00

The Hartford.

Wood Frame Wringers.

Size Nos.	Size of rolls.	Price per doz.
7	10 x 1⅝	$22.00
9	10 x 1¾	23.00

Invincible.

Wood Frame Wringers, with steel springs.

Size Nos.	Size of rolls.	Price per doz.
40	10 x 1¾	$30.00
42	11 x 1¾	34.00

Old Reliable.

Eureka style.

Size Nos.	Size of rolls.	Price per doz.
2	10 x 1¾	$21.00
3	11 x 1¾	25.00
4	12 x 1¾	30.00
5	14 x 1⅞	39.00
6	16 x 2	48.00

Cottage.

Eureka style.

Size Nos.	Size of rolls.	Price per doz.
2	10 x 1¾	$20.00
3	11 x 1¾	23.50

Globe.

Eureka style.

Size Nos.	Size of rolls.	Price per doz.
2	10 x 1¾	$19.00
3	11 x 1¾	22.50

Princess.

No. 11, Bench Wringer with Folding Bench.

Size No.	Size of rolls.	Price per doz.
11	10 x 1¾	$33.00

Hawkeye Nail Claw.—The Hawkeye Mfg. Company, Des Moines, Iowa, quote their Nail Claw, a description of which we gave in a recent issue, at $1.50 per dozen.

Oilers.—The prices of Zinc and Tin Oilers are regularly maintained by the associated manufacturers, but somewhat lower quotations are made by outside concerns.

Glass.—The much talked of Glass manufacturers' January meeting took place in Cleveland, Ohio, on the 20th inst., resulting in no advance in the price of Glass. The organization of a beneficial feature of the association was completed, with a beneficial fund to be set aside to aid firms with large stocks in tiding over dull periods. We understand that when a manufacturer is obliged to sell his Glass in order to meet obligations the association buys it at 5 per cent. less than association prices, thus relieving him of the necessity of going upon the open market and demoralizing prices. Such purchases are paid for out of the beneficial fund. The plan is considered as a good one by members of the jobbing trade and as likely to work, at least during this fire, or, in other words, until next July. The existing prices were reaffirmed at the meeting: 80 and 10 and 5 per cent. discount for carloads, and 80 and 10 per cent. for less than carload lots. Although it is reported that an advance in prices will be made at the February meeting, it is doubtless a fact that no advance will be made until the condition of the Glass trade justifies it. There are no changes in trade in this market since our last report, the demand for Glass still being light. Prices are still shaded, 80 and 20 per cent. discount reported as being given on fair sized orders. Quoted prices on imported Glass remain the same, but an extra 5 per cent., and in some cases even more, is obtained on good-sized orders. A Western paper estimates that there are 1371 pots in operation, 376 pots out of operation, and 624 pots in course of erection. This includes all of the factories in the United States, West, East and North. Quotations are as follows: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount. American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Trade Items.

THE CANTON SAW COMPANY'S works, Canton, Ohio, were visited by fire on the morning of January 15. The tempering, grinding and woodwork departments were partially destroyed by fire, which has caused a delay of a week or more in filling orders. Their mill dog department was not damaged, so that little delay will be occasioned in filling orders for these goods. A notice of the fire is appropriately printed on paper with burnt corners.

S. S. WILCOX, formerly dealer in Hardware at Big Rapids, Mich., has entered business at West Superior, Wis., and is fitting up a building for Hardware and Mill Supplies. Mr. Wilcox will be glad to be placed on the mailing list of manufacturers and jobbers for catalogues, circulars and price-lists regularly sent out to the trade.

THE ALLEN HARDWARE AND IMPLEMENT COMPANY, Paris, Texas, have been dissolved by mutual consent, J. A. Varner, W. A. Collins, W. F. Dulaney and J. W. Hale retiring. The interest of these gentlemen has been purchased by M. F. Allen, J. R. Hickman and J. S. Le Clercq, who will collect all debts due the firm and pay all claims against it. The business will be continued at the old stand under the style of M. F. Allen, Hickman & Co.

MERRIAM MFG. COMPANY, Durham, Conn., are sending with their compliments a japanned metal pocket to hold new-style postal cards. This is of sufficient size to hold a package of cards at a time, and has a hole in the back for suspending. A card accompanying the pocket calls attention to Stationers' Tinware, of which they are manufacturers.

JONES & FORBES have succeeded to the business formerly conducted by Hassett & Forbes, at Tecumseh, Neb. A full line of Hardware, Stoves, Tinware, &c., is carried.

F. A. HERRICK and Mr. Comstock will commence the Hardware business at Jackson, Mich., about March 1, the style of the firm being Herrick & Comstock. They will handle Builders' Hardware, Cutlery, Tools, Mantels, Grates, &c., and advise us that they are in the market to buy goods in these lines, and will doubtless be glad to hear from manufacturers and jobbers in regard to what they are offering. Mr. Herrick and Mr. Comstock have been with the firm of Warner & Dodge, the former for 18 and the latter for 14 years.

J. P. KELLY of the the Kelly Axe Mfg. Company, Louisville, Ky., has just returned from a very successful six weeks' trip through the turpentine regions in Southern Georgia and Florida, securing a large number of orders for their Perfect Boxing Axe, used largely in the section referred to.

W. H. QUINN, 103 Chambers street, New York, has been appointed agent for the line of Best Proof Crane and Stud Link Cable Chains, manufactured by West End Rolling Mill Company, Lebanon, Pa.

HERRICK'S PATENT AGRICULTURAL TOOL RACK, which is put on the market by F. A. Herrick & Co., Jackson, Mich., obviously meets a want of the trade, judging by the steady demand for it and the satisfaction which the manufacturers ad-

vise us that it gives. An illustration of it, with special reference to its utility and advantages will be found in the advertising pages.

LOVELL MFG. COMPANY, Erie, Pa., have established a New York office at 103 Chambers street, W. H. Quinn, manager. For the accommodation especially of trade in New York City and vicinity a stock of Wringers, Mouse Traps, Rat Traps, Cork Pullers, &c., will be carried.

WE HAVE A HINT of the approach of summer from the advertisement of John H. Graham & Co., 113 Chambers street, New York, in which they illustrate the Gem, American and Blizzard Freezers, calling attention at the same time to some of the points in their construction which they regard as specially important.

AT THE Saw, File and Tool works of Henry Disston & Sons business is reported to be assuming its old time activity. Orders since the first of the year have been somewhat larger, and cover a wider range of territory than for some time past. Inquiries for prices are also more numerous, so that prospects are considered quite favorable for the spring and summer trade. Among the orders received one morning two were for goods to be shipped to Russia, one to Moscow, the other to Tiflis in Southeast Russia, from which it may be inferred that Philadelphia is gradually working its way even into such inaccessible points as the Caucasus mountains.

THE DEMING COMPANY, Salem, Ohio, announce that they have secured for the management of their sales office at 72 John street, New York, the services of Maximo E. Mora, who will answer by letter or in person inquiries concerning the goods of their manufacture, and will, on application, furnish catalogues with prices for export.

FAYETTE R. PLUMB reports quite a heavy demand for his specialties, although no improvement in prices can be noted thus far. The last half of 1890 was the period of his greatest production of Edge Tools and Hammers up to that date, but the last half of 1891 surpassed it, and, from the present outlook a still larger increase will be made during the current year. Mr. Plumb regards the conditions as being unusually favorable for a satisfactory business during 1892, and while he does not look for any material advance in prices, the tendency must be in the direction of improvement.

SHORTLY AFTER the first of the year M. G. Willard, manager of the Standard Fiber-Ware Works of Mankato, Minn., addressed a letter to each of their employees, declaring a dividend of 3 per cent. on their last year's wages, and inclosing a check for the same. The office force were also given an increase of salary. It is the custom of this company to give their traveling salesmen who are to remain with them the coming year a two weeks holiday vacation on regular salary. The company have taken the above plan of expressing their appreciation of the faithfulness and loyalty of their employees.

KELLEY, MAUS & Co., Heavy Hardware jobbers, Lake street and Fifth avenue, Chicago, have made extensive improvements in the arrangement of their offices. Part of their clerical force has been removed to the second floor, leaving more space available on the ground floor for the use of the members of the firm and the heads of departments. New partitions of hardwood and glass have been built to separate the various divisions of the business, and in their arrangement better light and greater convenience have been secured. The change from the former cramped condition of the office force to the present roomy quarters has been most agreeable in every respect. The firm are now prepared to receive their customers in a manner befitting this progressive house.

THE AURORA WIRE GOODS AND MFG. COMPANY have succeeded the Chicago Wire Goods Company in the ownership of the factory at Aurora, Ill. They are now busily engaged in turning out Wire goods, making a specialty of the New Haven Broiler. It is their purpose to add to the line of products formerly made by the Chicago Wire Goods Company, and they are ready to make arrangements with persons owning patented novelties who do not have the necessary manufacturing facilities. A gas stove of a new type is among the goods which are now in preparation for the market. The officers of the company are as follows: J. O. Curry, president; E. W. Hall, secretary and treasurer; D. A. Wedmore, superintendent. They are represented in Chicago by R. F. Foster, 23 Lake street.

H. H. & C. L. MUNGER, 142 Lake street, Chicago, sole agents for the Munger-Colton Mfg. Company, have issued a new circular of the Colton Sliding Door Hanger, in which they illustrate in full its special points. A reduced copy of the large sheet of directions is given. The envelopes in which the special screws are packed are also illustrated. A full-sized sectional view of the Hanger, track, and adjacent parts of the partition occupies a portion of the circular. Every care is taken to thoroughly post mechanics how to use the Colton Hanger, and the result is beginning to be seen in the gratifying testimonials now coming in to the firm from those who have introduced it.

AT THE ANNUAL MEETING of the stockholders of the National Screw and Tack Company, Cleveland, the following directors were elected for the year 1892: J. K. Brainerd, D. Auld, Jr., T. F. Biedler, D. Elliott, W. D. B. Alexander, T. M. Irvine, and F. L. Gegelein. The directors met and elected officers as follows: President, W. D. B. Alexander; vice-president and general superintendent, D. Elliott; treasurer, D. Auld, Jr.; secretary, C. W. Brainerd.

WE HAVE RECEIVED from the Standard Fiber-Ware Company of Mankato, Minn., specimens of colored picture cards, of artistic design, which they are now distributing as advertisements of their goods. Cuts of the company's products are given on the reverse side of the cards. Other circulars ask the question "What is Fiberware?" and answer it by giving full information of the process of manufacture, which has already been described in these columns.

THE TRADE will observe the advertisement of Edwin Hills, Plainville, Conn., in which he illustrates Lemon Squeezers, Drills, &c., and calls attention to the fact that he manufactures Cake Turners, Cover Lifters, Flesh Forks, Pocket Wrenches, Mincing Knives, Curry Combs, &c.

G. T. MOORE, 112 Chambers street, has been appointed New York agent of the Noera Mfg. Company, 271 Franklin street, Boston, Mass. The line of goods thus offered to the trade includes the Noera and Draper Oilers and Lamps.

FRANK A. ELLIS & SON, wholesale and retail Hardware, Tools, Stoves, &c., Denver, Col., announce that Edward E. Stanchfield, who has been associated with them for several years, has entered into partnership. The firm will hereafter be Ellis, Son & Stanchfield.

KEENE MFG. COMPANY, Keene, N. H., refer to their Imperial Curry Comb as a new design from an English pattern made entirely of Steel, heavily nickel plated and thoroughly finished throughout. The manufacturers state that there is nothing in this country made like it, and that it is very popular wherever it has been introduced.

ON JANUARY 26 P. P. Mast & Co. sent out two special trains of Buckeye Sunbeam Cultivators which ran on schedule time, five minutes apart, from Springfield, Ohio, to St. Louis. At St. Louis the trains separated, one going solid to Kansas City and the other to Little Rock, Ark. The shipment contained upward of 3000 complete machines and required 50 cars. The shipment is referred to as much larger than any one shipment of cultivators ever made by any other factory, and its magnitude is such as to attract unusual attention.

THE PHILADELPHIA HARDWARE MANUFACTURERS' ASSOCIATION had their sixth annual dinner at the Manufacturers' Club last Thursday evening. The Philadelphia representative of *The Iron Age* had not the pleasure of participating in the entertainment, but has been informed that it was "simply immense." The decorations included many of the leading specialties manufactured by the gentlemen present, such as Meat Choppers, Files, Saws, Hammers, &c., the tables being arranged in horseshoe style. Report says that the designs were very artistic, and met with commendation on all sides. The members of the association were extremely well pleased with the entertainment, and feel that much was accomplished in a business point of view, apart from the good time they had. Fayette R. Plumb is the president of the association, H. A. Terry the vice president and Mr. Ayer of Buehler, Bonbright & Co. secretary.

Margin of Profit.

WE HAVE RECEIVED the following suggestive inquiry from a correspondent in Canada, in which a matter of very general interest to the Hardware trade is touched upon. As it is one deserving of careful consideration from merchants we take especial pleasure in laying it before them, with the invitation for an expression of their views on the question raised.

As your columns are open to the discussion of trade topics, I wish to avail myself of your courtesy by, perhaps, opening up a discussion with some of your many intelligent and wideawake Hardwaremen, on a question which is to my mind a very important one, in these days of keen competition, close buying and small profits. To make myself clear I will give an imaginary case: Suppose a merchant buys $100 worth of goods a month and sells them during the same time, and that this process goes on throughout the year. The goods are sold at 5 per cent. advance on the cost. Now, what I would like is an expression of opinion upon this question: "What would you consider the percentage of profit to be for the year?"

This question may be regarded as a comparatively simple one, and yet if carefully considered it may open up a large subject, and suggest the inquiry as to how small a profit the merchant can afford to sell goods at which are turned over in short intervals. Our correspondent also suggests that it touches upon the question as to the relative advantage of handling slow-selling goods at a large profit, and quick-selling goods at a small profit. We shall be glad to hear from the trade on this subject.

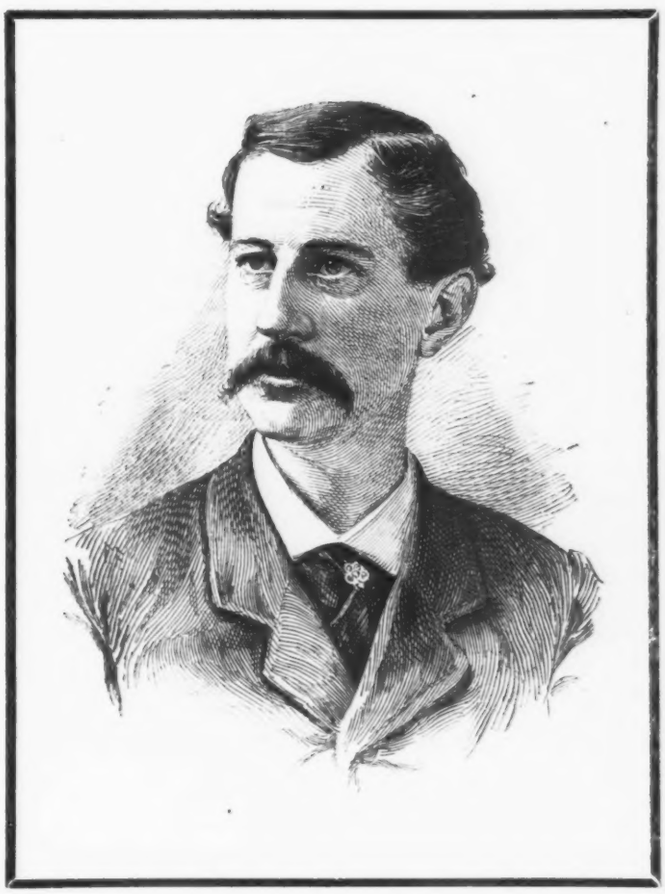
W. H. Barney.

THE ACCOMPANYING portrait of W. H. Barney, late member of the firm of Barney, Cavanagh & Long, Mobile, Ala., to whose death reference has been made, is from a photograph taken some years ago. Mr. Barney was a native of Mobile, and finished his education at the Virginia Military Institute, at Lexington, Va. When the Civil war broke out in 1861 he entered the Confederate Army with the Lexington Cadets, but in a short time was transferred to the Stey Battery of artillery, a company organized in Richmond, Va. He is described as a gallant soldier; and remained with his battery until the close of the war. Returning to his home, he entered the Hardware business in 1865.

The business with which he connected himself was founded by his grandfather, Charles Barney, nearly 60 years ago.

The firm name under which he entered business was W. H. Barney & Co., which was changed a few years later to Scranton, Barney & Co. In 1881 the firm again changed, owing to the death of Mr. Scranton, to Cavanagh, Barney & Brown, and so continued until 1883, when, owing to the death of T. P. Brown, the firm was changed to Cavanagh, Barney & Co. Mr. Cavanagh died in 1889, when the firm changed to Barney, Cavanagh & Long, Mr. Long having been head salesman for many years.

Although the style of the firm has been repeatedly changed since 1865, Mr. Barney's name has always been prominent.



W. H. BARNEY.

Screw Patents in England.

A VERY IMPORTANT legal decision has just been rendered in England, in which two of the largest Screw manufacturers in the world are concerned. The suit was brought two years ago by the Nettlefolds of Birmingham, who control the Harvey patents for England, against the American Screw Company, to prevent the use of the Rogers forging patents in Great Britain, which were alleged to infringe the Harvey patents. The point of the decision in question is that the Rogers patents for manufacturing Screws with a rolled thread do not infringe the Harvey patents, and the way is thus made clear for the establishment of the manufacture of the Screws in England, as well as for the sale of the Rogers patents in Europe, which we understand are the only practical ones for manufacturing rolled thread Screws.

This suit was regarded with very much interest throughout England, on account of the celebrated counsel engaged in it, including for the English company the Attorney-General, Sir Richard Webster, Q. C., M. P., Mr. Lawson, Q. C., Mr. Moulton, Q. C., and Mr. Aston, Q. C., while for chief expert the prosecution had Sir Frederick Bramwell. The American Screw Company's counsel were Messrs. Rigby, Q. C., Bousfield, Q. C., and Mr. Roger Wallace, with Professor Kennedy as expert. Owing to the eminence of the legal talent concerned in it, the position occupied by the parties to the suit, and the large issues involved, the litigation has been described as a trial of strength and resources between the Nettlefolds and the American Screw Company. The decision of the court was a complete victory for the American Screw Company, in whose favor it was made, with costs. This decision is important as freeing the patent of the American Screw Company, upon which the suit was brought, from litigation and allowing them to make a clean sale of the rights subject to license to the British Screw Company of Leeds. This company, we are advised, will be running with Screw-cutting machinery already sent from this country, probably within 60 days, as the factory there is already completed.

Neatness in Hardware Stores.

A CORRESPONDENT from San José, Cal., referring to the subject of "Neatness in Hardware Stores," states that he knows of no topic about which more could be written than this. He considers the average retail Hardware store of to-day a disgrace in this advanced and progressive age. Comparing Hardware with other lines he remarks:

Other trades show marked improvements in the arrangement of their stores yearly, but Hardwaremen have made very little attempt towards improving and beautifying theirs. I see no reason why a Hardware store cannot be kept as neat as any other store. The trouble is the Hardwaremen look backward for ideas instead of forward. If your store is once arranged nicely, it is no more trouble to keep it so than any other stock.

He then makes some practical suggestions as to the arrangement of goods and the condition in which stores should be kept:

There will always be goods in a Hardware store that it is next to impossible to make a nice show of. For such goods prepare a place in your store that will not stare people in the face upon entering. Don't have your Nail bins under the first counters and showcases, where they are constantly on the floor and catching on ladies' dresses. The best plan I ever saw for retailing Nails was to keep them in bins just like drawers. Make them heavy, 12 x 12 x 36, and have them slide on trunk rollers, with the front part open. They will hold something over 100 pounds.

Have all your racks, such as Steel Goods, Handles, &c., in the rear part of your store. Don't put any goods directly on the floor, and if you have to keep any thing loose in front of the store other than goods that will go on your shelves and in showcases, place them on neat painted boxes or tables.

Dust out thoroughly every day. Move every loose article and dust under it. Watch your shelves, and when a box is sold, fill the front up again. If a box becomes ragged replace it with another.

Wash and retrim your front windows every week. If nothing more, take the goods out and dust them off and set things around different from before. Have neat showcases and don't make a refuse box out of them, but arrange them as often as you do your show windows. Don't be afraid of wearing out dusters and brooms, and if there is a portion of your store that looks ragged and don't suit you improve it, and don't be content to let it stay as it is. Keep your store looking nice, and don't be contented by saying it is impossible to make a Hardware store look neat.

The Dinner of the Hardware and Metal Trades.

THE PROPOSED TRADE DINNER which was announced in our last issue evidently meets with favor among the trade, and the project has been taken up with such unanimity that it is already an assured success. The trade generally recognize the desirability of having such a social gathering for the cultivation of the amenities of business, as representatives of the different branches of the trade are brought together in a social way. The diagram which we published last week relating to the last gathering of the kind in this city, more than 30 years ago, was scrutinized with very much interest as giving a bird's-eye view of the trade at that time, when just previous to the war jobbing interests were at their hight. It also recalled to many of the older men in the trade the associations of their earlier business life, and impressed upon all who carefully inspected it the radical changes which have taken place in trade and the disappearance from the field of many houses who then were prominent. A kindly interest was also evinced toward the comparatively few now connected with the trade who were present on that occasion, and they were the recipients of many congratulations.

Since our last issue the following persons have been added to the Committee of Arrangements: M. C. Ogden of the Eagle Lock Company and the Southington Cutlery Company; Peter McCartee of the Stanley Works; A. D. Clinch of Underhill, Clinch & Co., and J. L. Varrick of Union Nut Company. Frank J. Oliver of Hawley Bros. Hardware Company was one of the original members of the committee, but his name was inadvertently omitted in our last issue. The committee as thus constituted is as follows:

W. R. WALKLEY,
DAVID H. JAMES,
J. C. MCCARTY,
W. A. GRAHAM,
ROBERT K. DANA,
U. T. HUNGERFORD,
A. H. SAXTON,
WILLIAM T. SMITH,
A. ALFORD,
R. L. WOODROUGH,
M. C. OGDEN,
FRANK J. OLIVER,
J. D. FOOTE,
HENRY M. LYON,
EUGENE BISSELL,
C. E. JENNINGS,
CHARLES MORRILL,
P. R. JENNINGS,
W. B. FOX,
W. T. NORTON,
JAMES SURPLESS,
C. E. PARKER,
J. P. TOPPING,
EDGAR UNDERHILL,
A. O. KITTREDGE,
J. H. KENNEDY,
W. H. FOWLER,
R. R. WILLIAMS.

W. R. Walkley, Chairman of the Committee of Arrangements, has designated the following as the Executive Committee:

U. T. HUNGERFORD, Chairman,
Wallace & Sons.
DAVID H. JAMES,
Central Stamping Company.
J. L. VARRICK,
Union Nut Company.
PETER MCCARTEE,
The Stanley Works.
P. R. JENNINGS,
Bruce & Cook.
EUGENE BISSELL,
Haydock & Bissell.
A. D. CLINCH,
Underhill, Clinch & Co.

A meeting of these committees has been called in the parlors of the Cosmopolitan Hotel, corner of Chambers street and West Broadway, Saturday, January 30, at 2 p.m. The chairman requests a full attendance, as important action will be taken.

It Is Reported—

That Messrs. Lyon and Ewald, who have been for many years associated with W. R. Perry and his succesors, Chaney & Latham, New London, Conn., as salesmen, will open a new store in that city about April 1, conducting the Hardware business under the style of Lyon & Ewald.

That the firm of Babcock & Miles, one of the largest Hardware firms in Montana, has been dissolved. The Livingston and Big Timber stores will in future be controlled by the A. W. Miles Hardware Company, a corporation of which Mr. Miles is the head. Mr. Babcock takes the Billings and Red Lodge stores, while the Castle store, which was recently incorporated under the name of the Castle Hardware Company by A. W. Miles, A. L. Babcock and P. H. Tooley, will be run as formerly.

That W. H. Stewart, of the Hardware firm of Kratser & Stewart, Delta, Col., has sold his interest in the business to J. P. Bassler. Mr. Stewart will devote his time hereafter to looking after his stock business.

That in a large conflagration at Au Sable, Mich., on the 15th inst., the Hardware establishment of Wilcox & Richards was destroyed. Their loss is estimated at $20,000.

That M. Diggs has commenced the Hardware business at Woodland, Cal.

That the Hardware firm of Gray & French, Middleport, N. Y., has been dissolved. Edgar French will continue the business at the old stand.

That the Hardware store of Hartline & Lingle, Almira, Wash., was destroyed by fire on the night of January 3. Loss, $5000; insurance, $2500.

That E. W. Schmidt has bought A. L. Whaley's interest in the Hardware business at Valley Springs, S. D.

That the firm of Flettie & Johnson, dealers in Hardware, Portland, N. D., has been dissolved, the latter withdrawing. Mr. Gridley has purchased his interest and will continue the business in connection with Mr. Flettie.

That William Amend has sold his Hardware stock at Fairview, Kan., to Moore & Joss.

That the firm of Schwein & Wehrman, Stove and Hardware dealers at St. Joseph, Mo., has been dissolved by mutual consent. Mr. Wehrman has retired and Mr. Schwein will continue the business alone.

That the Hardware firm of Dorman & Smyth, Salisbury, Md, will in a few days be converted into a stock company, under the name of the Dorman & Smyth Hardware Company. The capital stock will be $40,000. Among the stockholders are the members of the old firm, Judge Holland, L. E. Williams, Jas. E. Ellegood, A. J. Benjamin, O. M. Benjamin, A. F. Benjamin and William H. McConkey. The new company will be under the management of Messrs Dorman and Smyth.

That J. T. Creamer and P. J. Carey are contemplating engaging in the Implement business at Crookston, Minn.

That Brown & Mitchell have purchased the Hardware business of A. McLean, Brandon, Kan.

That Frank E. Hunt, Red Lake Falls, Minn., is moving his Hardware business to new quarters.

That J. P. Sommers, Hastings, Minn., has sold his stock of Hardware to A. B. Hanson of Red Wing, who will continue the business.

That Moon & Co. have opened up a new Hardware store at Redwood Falls, Minn.

That John Johnson and Alexander Simpson have entered into partnership and will soon open a Hardware store at Tomah, Wis.

That J. Abbott, S. E. Carter and J. R. Patty comprise a firm who have recently commenced the Hardware business at Hillsboro, Texas.

That a new Hardware firm is that of Thomas & Dougherty, Creston, Iowa.

That S. Scott has sold his Hardware business at Keeler, Mich., to Merritt & McMellan, who will continue it.

That the Sunday Creek Hardware Company have been organized at Trimble, Ohio, with a capital stock of $20,000

That the building occupied by W. A. McMillan & Son, Hardware merchants, Aberdeen, Miss., was destroyed by fire on the 15th inst. The firm was insured for $6000.

That at the annual meeting of the May-Thomas Hardware Company, Birmingham, Ala., the capital stock was increased from $35,000 to $50,000 The following officers were elected: C. E. Thomas, president; L. A. May, vice-president, and T. W. Gathwright, secretary and treasurer.

That J. E. Fernald's Hardware store at Farmington, N. H., was burglarized on the 13th inst. Forty dollars' worth of goods were taken.

That J. L. Malcom's store at Uniontown, Pa., was robbed on the 14th inst. The stolen booty comprised 15 Revolvers, 40 Razors and some other Cutlery.

That W. W. Douglas, Santa Paula, Cal., who bought the Hardware stock of Ord & Hazelton, has moved it to Los Angeles, where he will engage in the business.

That fire at Agency, Iowa, recently destroyed McGuire's Hardware store.

That Murdock & Barnum have commenced the Hardware business at Kirkwood, Ill.

That T. B. Ambrose, Ashland, Ohio, is removing his Hardware stock to a new store.

That William Cameron & Co., dealers in Hardware and Lumber, Hubbard City, Texas, have sold out their entire business to T. C. Morgan & Bros.

That fire at Dangerfield, Texas, on the 13th inst., destroyed the Hardware establishment of James, Smith & James. Loss, $6000; no insurance.

That Griffith & Woolerton, Hardware dealers, Downingtown, Pa., were robbed on the 14th inst. Shotguns, Revolvers and Razors were taken away.

That J. H. Leacher has purchased the Hardware store of Welliver & Co., Nanticoke, Pa.

That the Hardware business heretofore conducted by William Noll & Sons at Marshfield, Wis., has been incorporated

under the name of the William Noll Hardware Company. William Sr., William Jr., Frank and Charles Noll are the incorporators.

That Smith & Seabourne's Hardware store at Southwest City, Mo., was destroyed by fire on the 10th inst. The loss is $20,000, with no insurance.

That John Hughes, Hardware merchant, Sandy Creek, N. Y., has moved to larger quarters.

That the new Hardware store of James Fisher, at Farmersville Station, N. Y., is nearly completed.

That Evens & McOmber, El Paso, Ill., have sold their Hardware business to Sheen Bros.

That C. C. Ruse, Dawson, Pa., has moved his stock of Hardware into his new store.

That Pettit Bros., Cuba, N. Y., Hardware dealers, have removed their stock to their new store, which has recently been completed.

That Ira Edwards is to open a Hardware store at Hulberton, N. Y.

That the stock and good will of the Stove and Hardware business of Sweeney & Townsend, Kingston, N. Y., have been purchased by Alderman Weiber.

That C. S. Shepard and A. A. Thomas, Forestville, N. Y., have purchased the stock of Hardware, &c., of the late William Dikeman.

Lawn Mowers.

MANUFACTURERS of Lawn Mowers are calling attention to their Mowers for the coming season. In addition to the machines with which the trade is familiar, there will be a number of new Mowers on the market. There will doubtless be considerable competition in these goods, and low prices will probably be named for those Mowers which have not a recognized reputation.

We are in receipt of some artistic folders from Supplee Hardware Company, Philadelphia, illustrating and describing the Pennsylvania, New Quaker City, Continental and Great American Lawn Mowers.

Chadborn & Coldwell Mfg. Company, to whose Mowers we recently referred, advise us that all their Mowers for this year are somewhat improved. They are calling special attention to their Rival Mower, which is entirely new in some of its features, this being the first year it has been on the market. The special features of this Mower are found in the peculiar form of the stationary knife, which is concave; also in the adjustments, which are very positive in their results.

Price-Lists, Circulars, &c.

THE E. COVERT MFG. COMPANY, Farmer Village, N. Y.: Price-list No. 16, 1892. A full line of their goods are shown, with prices, including Neck Yoke Centers Trimmed Neck Yokes, and specialties in Saddlery, Coach and general Hardware.

O. LINDEMANN & Co., 81 Beekman street, New York: Bird Cages. A large size catalogue of 31 pages gives illustrations and prices of Cages. It is stated that all their Japanned Cages are painted with zinc white, trimmed in bright red, green or blue and thoroughly baked in a drying room, making the enamel as hard as china. Attention is called to a peculiar feature of their square and oblong square japanned Cages with drawers, being made in two, three and four sizes, so that they may be nested and save much room in packing. Other features are introduced peculiar to their Cages; and prices have been reduced on many styles of Japanned and Brass Canary Cages, as much as was consistent with first-class workmanship.

FREDERICK PEARCE, 77-79 John street, New York, in addition to catalogue of Telegraph and Electrical Instruments, issues illustrated circulars relating to Triumph and Simple Pendant Electric Gas Burners, Combination Letter Boxes for apartment houses and offices, Embossing Registers, District Office Bells, Mounted Electric Lamps, Gem Electric Motors, Electric Light Scarf Pin, Students' Plunge Battery, Spring Inking Register, &c.

ROSSENDALE BELTING COMPANY, Newark, N. J.: Anti-Frictioned Edge Hair Belting. These Camel Hair Belts are referred to as being stronger, more durable cheaper, more effective, and as stretching less than leather. Another advantage claimed for these Belts is that they come straight off the drum, and do not follow and adhere to it, as in the case of leather. A number of testimonials emphasize the esteem in which the Belts are held by factory owners.

CHAMPION BOLT CLIPPER COMPANY, Evansburg, Pa.: Carriage Makers' and Horseshoers' Supplies, Champion Bolt Clipper, Nail Head Nipper, Hoof and Clinch Nipper, Buffers, Sole Knives, Fore Punch and Creasing Fuller, Clinch Tongs, Hammers, Wire Nippers, Machinists', Woodworkers' and Combination Vises, and Vise Jaws for Coachmakers.

MT. PLEASANT MFG. COMPANY, Mt. Pleasant, Mich.: Window Screens and Door Screens. They call attention to the construction and durability of their goods, stating that they manufacture from nothing but thoroughly kiln dried lumber, and that particular care is taken in the selection of a good grade of wire cloth.

S. L. ALLEN & Co., Philadelphia, Pa.: The Planet Jr. Implements. Special attention is given to Garden Tools and One-Horse Cultivators. The manufacturers state that the new Tools which they brought out last year immediately won a place for themselves, and the new Tools which they offer this year they feel sure will be equally successful.

FREEMAN, DELAMATER & Co., Detroit, Mich.: Illustrated circular for 1892. Farming and Garden Tools, Shovels, Spades, Wire Cloth, Screen Doors and Windows, Lawn Mowers, Ice Cream Freezers, Refrigerators, Barbed Fencing, &c. Particular attention is directed to their line of Otsego Steel Goods, for which they are Michigan agents.

THE DAYTON MFG. COMPANY, Dayton, Ohio, send a number of supplemental pages for insertion in their catalogue No. 19. The sheets give illustrations of their regular line, Furnishings for Railway Cars, and show many neat and handsome designs, and conform in general outline to the catalogue for which they are designed

F. E. KOHLER & Co., successors to the Chieftain Company, Canton, Ohio: Hardware specialties. The company will continue manufacturing the same line of goods that have become so popular under the management of the Chieftain Company, with such additions to their line from time to time as they may deem advisable

T. H. CHUBB COMPANY, Post Mills, Vt., will soon issue an elaborate catalogue for 1892. This is referred to as containing much of interest to anglers, explaining all about the Chubb trade-mark Rods and Tackle, illustrating and describing Fishing Tackle of to-day. The catalogue will be

FRENCH, WATSON & Co., Hartford, Vt.: Cast-Steel Hay and Manure Forks, Garden Rakes and Hoes, Shovels, Spades, &c. They refer to their Manure Forks and Spades as now being made with solid steel shanks and patent cap ferrules, thus containing a beauty of finish and strength where most required. All handles, it is stated, are from the best of New England white ash, and selected with care before being used. The fact is emphasized that the stock used in the manufacture of their goods is the best they can secure, and that great care is taken in finishing them.

BINGHAMTON SCALE WORKS, Osgood & Thompson, Binghamton, N. Y.: Osgood U. S. Standard Scales. The manufacturers, while making a full line of the larger class of goods, call attention to the Combination Wagon Scale as their specialty for weighing coal, hay, grain, stock, cotton, &c. These they not only ship on trial, but give a written guarantee for five years upon receipt of payment for each scale. In response to repeated demands, they have added to their list of portable scales, the 400 pound size, which is proving a very popular scale. They have also added a new double beam Portable Scale in the 600 pound and 1000 pound sizes for dairy use. They have made a number of changes in the style of their Dormant Warehouse Scales, which changes are referred to as greatly improving this line of goods.

THE HENWOOD COMPANY, Lancaster, Pa.: Packing, Lock Corner, Shelf Hardware, Spice, Florists', Mailing and Druggists' Turned Boxes; File Handles and Jewelers' Tool Handles, Electric Bell Boxes and Push Buttons of natural oak wood finish, also walnut and mahogany stained, and Harness Pins. The faces of their Hardware Shelf Boxes are polished by the French polish system. They are referred to as being as bright as if varnished, without having any varnish on them to scratch or crack; as being as smooth as glass, so that the dust cannot adhere; and as not becoming easily soiled by the proverbially dirty Hardware fingers. The faces can be finished in any natural wood desired, the most popular being oak, yellow pine and cherry. They have lately been awarded several contracts for Lock Corner Wooden Boxes for packing, at a very small advance over the price of paper boxes. They are prepared to print on these boxes any matter that may be desired for quantity orders.

ISAAC WALKER HARDWARE COMPANY, Peoria, Ill.: Pieced, Pressed and Japanned Tinware, Granite Ironware, Hollow Ware and Metals. Their 1892 catalogue of 109 pages gives illustrations and prices of Pieced Tinware, Deep Stamped Ware, Granite Ware, Japanned Ware, Wire Goods, Stove Ware, Elbows, Tinners' Supplies, &c., arranged in departments in the foregoing order.

PRATT & LETCHWORTH, Buffalo, N. Y., send a book 2¼ x 3¼ inches in size, upon the front cover of which is a horse's head, and the words "Make a note of it." The inside of the front cover has a calendar for the first three months of the year, while on the inside of the last cover are dates for 1892 entire. The leaves of the book are all blank.

WESTERN FILE COMPANY, Beaver Falls, Pa., are sending out tasty blotter pads, having colored celluloid covers, and directing the attention of purchasers to the advantages resulting from the buying of Western Files.

THE FOOS MFG. COMPANY, Springfield, Ohio, send an 1892 calendar, in the center of which is a steel engraving of G. S. Foos, surrounded on three sides by the months of the year. The lower portion of the card is devoted to illustrations and descriptions of their Scientific grinding mills.

What Manufacturers Say in Regard to

NET PRICES.

IN ADDITION to the letters from manufacturers referred to in our last issue, in which they discuss the question of a more general making of net prices, we have many others from leading manufacturing concerns in different parts of the country. In these letters the matter is looked at from many different points of view, each manufacturer naturally considering it primarily from the standpoint of his own interests, and the desirability of abandoning lists and discounts in connection with his particular line. The general tenor of these letters is in opposition to any change in the present system, but some of our correspondents, as will be seen from the extracts given below, are disposed to regard rather favorably the movement toward the abolition of lists and discounts. These are, however, rather exceptional, and the large preponderance of preference is for a continuance of the present method. In connection with the expression of opinion on this point many of our correspondents touch upon trade questions more or less closely related, and as the writers of the letters from which the following extracts are taken are among the most prominent manufacturers in the country, their views are entitled to very careful consideration. It is not often that the trade have an opportunity of being brought thus directly in contact with representative manufacturers whose expressions are entitled to weight.

The following letter from one of the largest manufacturers of Steel Goods is deserving of careful consideration, as our correspondent takes a broad view of the question and discusses it in a forcible manner:

We have read in your issue of the 14th extracts from jobbers in favor of abolishing lists and discounts. We had expected to see a strong presentation of reasons for this movement, and find a rather weak and decidedly contradictory one. Some jobbers favor it on the ground that it would be a great saving in time and expense to themselves and their customers in figuring discounts, &c. Others, and we think the more candid ones, admit that the list and discount system is a great convenience, enabling the buyers to keep posted with very little labor, but urge the net-price system because the greater difficulty in keeping informed on prices would enable the skillful Hardwareman to get better margins. We concede the need of better margins, but we do not believe they can be reached through turning backward the methods of doing business. The primitive order of things was the net price. Lists and discounts are a development. They have come into use with the increase in variety of goods, and because the limitations of memory or memorandum did not admit of carrying the prices on rapidly increasing kinds, patterns and sizes. To attempt now to tear down this structure, to cast aside a system which has grown with the spirit and necessities of the times and go back to more primitive and more difficult methods is like the demands of workmen to have the use of machinery abolished. And it will be as vain. The country is not discarding the quicker and easier way of doing things and going back to the slower and harder ones. It galled the skillful workman to see an ordinary hand able, by machinery, to do more and better work than himself. So, as one of your correspondents puts it, "In the 'good old days' under the net price system a Hardwareman was regarded as a person of more than usual ability, as indeed he must needs be in order to succeed in a business having so great an amount of detail, but in these 'degenerate times' by the means of a printed catalogue and discount sheet, a man of very ordinary ability can, with a few days of posting up, become an accomplished Hardware salesman." But manufacturers are not going back from machine to hand labor, nor do we think, where the variety of kinds and sizes is large, will they go back to net prices. For ourselves, if the jobbers generally desire it, we should be willing to conform to their wishes. We should, however, expect in a very short time to be importuned to quote them on a list and discounts.

A representative manufacturer in another line makes the point that the tendency has rather been toward high lists and long discounts, which, according to their experience, are preferred by retailers. They also suggest that if goods were sold at net prices it would be necessary for the manufacturer to have different net prices for the different classes of trade:

We can hardly see how goods could be sold on a net price-list, unless you were to have different net prices to meet the requirements of the jobber, retailer and consumer, especially the jobber and the retailer, as there must be a margin of profit left between the two, and as a rule the jobber sells from the manufacturer's catalogue, especially on house-furnishing goods such as we manufacture. Besides this, on the class of goods we handle the retailer will in many cases use our catalogue in selling, and place same before his customer. Were the prices net the customer at a glance could tell the margin of profit that was being charged him, which would prohibit the use of our catalogues by the dealers in making sales. Our experience would indicate that the jobber as well as the retailer were not only demanding prices with discounts, but were continually asking for longer prices on which the discount could be made much larger. We find that many manufacturers make a long list and give an extreme discount, and we often have our customers bring up the point that we are not giving them as good a discount as that given by some of our competitors, showing that the discount is what they seem to be working on, and that the list price is not considered. It is difficult to issue any set of prices that will exactly meet the views of all dealers, but, in our opinion, for convenience of all concerned a long list price with a large discount is the most satisfactory. This wil enable a dealer at a long distance from you to place your goods in his stock and still have a margin left to apply on his profits.

The following letter is from a leading manufacturer of Ammunition. It is pointed out that the principal advantage to be gained by the adoption of the net price system would be that the large trade might be enabled to make a broader margin on the goods:

We have read the article on net prices in your issue of the 14th inst., and observe that there is some difference of opinion among jobbers as to the benefits of such compared with lists and discounts. So far as manufacturers are concerned, we think that net prices are certainly practicable, and if adopted by the general wish of jobbers would be desirable. Such a radical change, however, from lists and discounts to net prices would entail greater labor and care on the part of manufacturers and their agents, yet this in most lines would soon adjust itself, and far more quickly probably than would such changed conditions be accepted and adopted by many hardware jobbers and their legion of salesmen. The real advantage to manufacturers by adopting net prices would, in our opinion, be slight, except indirectly as their customers might be benefited by greater average profits. In considering its adoption, we should be guided entirely by what appeared to us to be the general desire of our customers, and for their best interests.

The house whose letter is given below apparently regard the matter as not of very pressing importance, inasmuch as competition is likely to be as intense under one system as the other:

Having tried both systems extensively in our business experience as manufacturers, we are not prepared to say that there is any great advantage in one system over the other. The "irrepressible conflict" remains the same—on the one hand a desire to secure a remunerative price by the maker, and a persistency on the part of the purchaser to buy at the lowest price possible, irrespective of any other considerations. In many respects and on many lines it would seem to us that price-lists and discounts are almost a necessity. On other lines it may not be so important, but in the end we can see no particular benefit to be derived in the adoption of one system over the other. We only hope that the agitation of the subject may not result in such division of sentiment as to result in two parties, the one requiring long prices, the other net, and making the confusion still more confounding than at present. This would certainly be unfortunate.

One of the largest manufacturers of Tacks in the country refers in the following terms to the impracticability of applying net prices to this line of goods, and alludes also to the trouble that would be occasioned by issuing a printed net price list. This latter point is one the force of which has not apparently been recognized by those who have favored the general adoption of net prices:

Our list of manufactures comprises several thousand different kinds, sizes and classes. The names or kinds of the articles alone, barring sizes and classes, exceed 1000 in number. Hence it would be very inconvenient, not to say impracticable, for us to quote net prices on the line. It would at least involve an increased expense and labor; for should we meet the requirements of the case, in the only available way, by issuing a printed net price-list, it would receive the universal disapproval of our customers. On Shelf Hardware goods, such as we make, if sold at net prices, a profit, either by ourselves or by our customers, would soon become an "innocuous desuetude." On heavy Hardware goods it is another matter, and we think they are most appropriately sold at net prices.

The fact that for manufacturers dealing with the large and small trade several lists would be necessary is forcibly brought out in the following communication from a prominent Ohio manufacturer. They also allude to the fact that the low prices ruling are to a certain extent to be ascribed to cutting of prices by the jobbers:

The general abandonment of lists and discounts and the substitution of net prices for our goods is not practicable and desirable for the following reasons: Manufacturers must be ready to fill orders from all comers—the large jobber in the great commercial centers—the wholesaler in the lesser cities, and the retailer or supply houses in the manufacturing towns, and the large consumer direct. There is a growing tendency among large manufacturers to buy all their supplies in large quantities, and from the manufacturer direct. Now, if we were to abandon the catalogue or list-price and discount, it would be necessary to have three or four complete catalogues or lists—one for each of the above classes, and it would require the utmost care and accuracy to prevent serious blunders in mailing them. The jebbers have themselves to blame for the confusion now existing in discounts. They use their utmost efforts to get an inside discount, and no sooner is it granted than they quote to all their customers, and every one else's, a little lower price—thus forcing the manufacturer to give a little better price to his second-class customers in order to protect himself, and hold trade that he has been at great expense to get. Now, it is a very small matter to issue a few hundred discount sheets, scaling down prices a little here and there, and to keep track of such sheets, but it would be a mountainous job to print and issue as many new and complete price-lists or catalogues, and confusion would reign supreme. All manufacturers in our line print complete catalogues, the list prices in which have not changed for nearly 20 years. Now every Hardware dealer in the country knows the list is uniform—he also knows the discount off—he knows just where he stands, and can decide in five seconds whether or not he wants the goods. If the catalogue system were abandoned to-day we predict that in six months the list as furnished the jobber would be the basis for a new system of discounts, and the jobber would get one discount, the wholesaler another, the retailer a third, large consumers a fourth, and others net, and the ball once set rolling nothing would stop it except an iron-clad combination of manufacturers, when the price would be set up only to be knocked down again in like manner.

The following extract represents the view of a well-known manufacturer of Locks:

From our own experience the substitution of net prices instead of list and discount is not to the interest of the manufacturer. The plan of making net prices has, we think, always seriously demoralized our business. The action of the buyer is generally to get net prices from as many makers as possible and then to buy from each only such goods as prices are lowest on, or more frequently and worse, to use p.ices obtained from several different makers to beat the manufacturer down on the entire line of goods that he makes, and he is able to accomplish results that could never be obtained could he only obtain from each maker discount which would apply on the entire line of goods. Furthermore, the expense and friction of doing business are increased. Glaring inequality of quotations is apt to exist, and, in fact, our own experience goes to show that a system of giving net prices is in every respect detrimental to our interest, nor do we believe that in the end it works to the advantage of the dealer.

For the following careful discussion of the question we are indebted to one of the best-known manufacturers of Tinware, who discusses the matter especially with reference to this line:

We think, as a rule, it is better to have list prices, because any intelligent buyer can easily get at net cost, and a great saving of time and labor is effected in quoting lists (which are printed) and discounts from same. In the Tinware business there is a large variety and many sizes of goods, making a long list. Buyers must know prices before they will place orders. The list and discount system enables jobbers and manufacturers to furnish them in the most compact form. It is essential that list prices should be correct, and in order that they may be so they should be frequently revised, for changes in the cost of materials are occurring almost constantly, and improved methods and machines reduce the cost of manufacture, so that lists cannot be made like permanent rules of measurement. For this reason lists should not be printed in descriptive catalogues, but on seperate sheets, so they may be changed with little expense. If manufacturers engaged in the same line of business would fraternize enough to come together occasionally or at stated times to talk over matters of general interest, and to consider plans for their advancement, much could be accomplished. Correct lists could be agreed upon and established. This would not fix prices nor do away with competition, but would simplify business and reduce the friction and worry. If we are to choose between an imperfect list, requiring all sorts of discounts on the same line of goods, and a net list, we would prefer the latter. By "imperfect list" we refer to a list which we are obliged to use because it has been adopted and is used by all the manufacturers of Stamped Ware. It was made several years ago when the difference between IC Tin Plates and Crosses was considerably greater than it is now and before the recent changes in freight classification rates, which increase the cost of delivery on many styles of goods a large percentum. The manufacturer has to pay this increased cost. If we sell at what may be called the usual trade discounts, some goods will be sold at cost, or less, while others in the same line afford a profit that is satisfactory. If we sell at an extreme discount, we must figure out each specification item by item to ascertain whether the average will be on the side of profit or loss. The list bears no just relation to the cost of the goods and is, therefore, imperfect.

The impracticability of applying net prices to Files is enforced in the following letter from a prominent manufacturer in this line. The point, however, is also made that there is no objection to the jobbers using net prices if they consider it to their interest:

As manufacturers of an article that has many kinds, shapes and lengths, we cannot see how we could well manage with a net selling list, as when prices would decline 2½, 5 or 10 per cent, or advance the same amount, we would be compelled to have new lists printed each time, which would soon lead to confusion, &c. We think that a uniform list for all manufacturers who make the same class of goods is the essence of system, simplicity and business standard, is the outcome of centuries of experience, and will last as long as manufacturers exist. Should we manufacture better goods than N. or O. we will receive most of the orders if the list is the same and net; consequently N. and O. are compelled to give a discount on the list or have lower lists of their own so as to obtain orders to keep their factories employed. We do not wish to be understood as objecting to jobbers or retailers using any list they please for their customers, as we understand jobbers at present have many goods that they are selling at net prices and retailers in almost every instance sell at net prices, but note us as a manufacturer in favor of a standard list with discounts to suit.

In the following letter it is apparently implied that the general use of net prices by manufacturers would be seriously detrimental to the jobbers' interests, on the principle, we presume, that there would then be a tendency to quote one price to the trade, large and small. A little reflection will convince our readers that there is force in this view of the case:

It has been some years since the writer was in the Shelf Hardware business, and for several years past he has been engaged in the Carriage and Saddlery trade. In our judgment the lists need revising, as there seems to be no immediate prospect of prices ever getting back, or even the cost of material, to where they were during or immediately after the war. The tendency has been constantly downward, and as a result it has increased the discounts on all lists. Speaking from a manufacturer's standpoint, if jobbers are to be done away with and the manufacturers have no occasion to protect them longer, then it would be advisable to do away with discounts and make net prices. If the jobber is to be taken into consideration and manufacturers continue to do business through jobbers or with them, and are compelled to protect them, in our judgment it would be advisable to continue discounts, but there should be a revision of lists and get the discounts to as low a percentage as the goods will stand. When dealing with large consumers it is not only practical, but preferable to make net prices.

The following letter is from a well-known house who manufacture a line of Spring Hinges in considerable variety. It will be observed that a somewhat different view is taken of the question than that expressed by some other correspondents:

From the consideration we have been able to give the subject, we are not prepared to advocate a general abandonment of the list and discount system and the substitution of net prices therefor. It seems to us that a medium course might be adopted to advantage. On some of the goods we manufacture we consider it essential that we should publish a list which will indicate approximately the value of the goods. It often happens in a line comprising numerous items that competition will require one or two items, which are leading sizes or numbers, to be sold at low prices, and in such cases, where a discount system prevails, a manufacturer will not infrequently find that in order to make his price low enough on the leading sizes he has unnecessarily reduced the price on the sizes on which there was little, if any, competition. If net prices prevailed in such a case, a manufacturer need only change his price on the best selling articles as occasion might require. We have in mind one line of goods which comprises 30 or 40 items, of which one-half of the sales falls on two items. We believe that had a net system been in force ten years ago, the manufacturer would to day be getting 5 to 10% more on one half of his product, at the same time having kept pace with competition and given satisfaction to his customers in regard to prices.

Bicycles in Hardware Stores.

THE Hardware dealers throughout the country are generally regarded by Bicycle manufacturers as their best agents. Bicycles are becoming a staple in a large proportion of the Hardware stores, and the merchants handling them are finding it a pleasant and profitable part of the business. The limit has not yet been reached in the number of Bicycle factories, in the output of machines, nor in the demand for wheels. The Hardware merchant need not hesitate to carry at least samples, and perhaps a stock, fearing that cycling is only a fad, which will soon go out of fashion. This is a line of goods which many of our readers advise us can be carried to advantage.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The sensation caused by the new departure of the corroders controlled by the National Lead Company in putting upon the market a full line of Tinting Colors at remarkably low prices appears to have subsided, and, on the part of those interests in the trade directly affected, the inevitable is calmly submitted to. In other words, Color manufacturers have adjusted their prices so as to compete with the new rival as successfully as possible, and it is now a matter of speculation whether trade will be diverted from the old channels to any considerable extent. In any event it is patent that the retailer and the consumer enjoy a certain amount of advantage, as far at least as the gross expense of pigment in complete shape for house painting may be concerned. Rumors of retaliation through the establishing of "outside" corroding plant have circulation, but up to the present time those rumors seem to be without solid foundation and carry little or no weight in the trade. Apart from this matter the trade is really bare of interesting feature. In a general way, business may be said to be of about usual character and volume for the season and somewhat larger than might be expected considering the disturbing influences above alluded to.

White Lead.—Local corroders generally report that orders for their chief product are still running ahead of those secured at the corresponding period last year, and the returns from other quarters sent in to the officials of the National Lead Company indicate that out of town establishments are doing quite as well as the local interest. That the especial attraction of Tinting Colors at low prices has assisted the sale of pure Lead is more than probable, although not admitted at headquarters, and the indications are, that as the so-called educational campaign progresses, mixed Leads will find more formidable competition than ever before. However, it would appear from general report that the better class of mixed Leads which have proven to be useful for various purposes are holding their own remarkably well, and, at existing difference between prices of the same and corroders' product, are quite as cheap for most uses. The low cost of Pig Lead tends to encourage the belief that some modification of prices of White Lead will be made ere long, but it is obvious that some stronger argument than this is necessary to influence the controlling interest at present, considering the favorable run of orders during the past two or three weeks and the temperate character of outside competition.

Red Lead and Litharge.—In Red Lead there is merely a routine business passing, and nearly all contracts making are at the official rates. The grades of Litharge used by glass manufacturers have met with freer sales, chiefly at 5½¢ @ 6¢, as to quality and size of lot, but the better grades adapted for Paint trade purposes are moving off in moderate quantities only.

Zincs.—No change is apparent in the market for American Oxide. New orders are not as numerous nor as large as might be desired, probably for the reason that manufacturers of mixed Leads and ready mixed Paints are a little uncertain about the effect of the recent departure on the part of the National Lead Company, but producers maintain a firm position, and quote the old range of prices. Foreign brands are without quotable change as to prices, but the goods move slowly, and at present are in moderate demand.

Colors.—Manufacturers generally have made more or less revision of prices for Oil Colors, as dictated by the competition from the National Lead Company's products, but in Dry Colors there have been no decided changes. Business broadens out as the spring season advances, but as yet there is not much more than a routine business in house-painters' staples or the specialties adapted to particular lines. Colors for grinders' use are moving in merely a routine way and at old prices.

Oils and Turpentine.

The past week has been an uneventful one in the market for Animal and Vegetable Oils. Outside of heavy importations of Cocoanut Oil and more or less depression in value of the goods, no special feature is to go on record. Business has been of strictly routine character throughout and the general demand tame. Even Cotton-Seed and Linseed Oils, in which a certain degree of speculative interest centers, have been handled in an extremely conservative way. Movements in prices are unimportant, and, with some few minor exceptions, a very steady tone prevails in the absence of new conditions that would prompt any decided move on the part of buyers or sellers.

Linseed Oil.—A number of sales of carload lots of Western have been made at 35¢, delivered here and in immediate vicinity during the next month or six weeks. The movement in out of town product is thus rather livelier, and the prices paid would indicate rather more confidence in the market. Sales of city brands have also increased somewhat, and upon the whole the market shows better form. Evidences are not wanting that existing low prices for pure Linseed product prompt large consumers to use the commodity exclusively where substitutes and adulterants were employed a year ago. Even among the smaller trade there has been a similar diversion also, and upon the whole the consumption is gaining pace that tends to strengthen the market.

Cotton-Seed Oils.—For the past week a quiet and uninteresting market is to be reported. Exporters have purchased nothing to speak of, and business on home account has been of routine character in the fullest meaning of the term. Prices for crude product have receded slightly, while those for refined have fairly held their own, making altogether a more normal condition of affairs than has been experienced for some little time past. Transactions, which have been chiefly in lots of a few hundred barrels, have been at 25¢ @ 25½¢ for prime crudes; 22½¢ @ 23¢ for "off" grade do; 29¢ @ 29½¢ for prime Summer Yellow, and 28¢ @ 28½¢ for inferior refined.

Cocoanut Oil.—Importations of pretty heavy total have arrived during the past week, nearly all but recent shipments having come along in a bunch. This large supply, besides meeting buyers' wants in full, left more or less surplus, under the weight of which prices receded to 5⅝¢ @ 5¾¢ for Ceylon, and 6¼¢ for Cochin. Liberal purchases relieved the load considerably, however, and the market is now looking stronger.

Lard Oil.—While prices are not quotably higher, the market for both city and out of town brands of prime present make Oil is very firm, in sympathy with enhanced cost of raw material. Home trade jobbing demand continues very steady, beyond which a full average export movement is noted.

Fish Oils.—There has been no movement whatever in the market for crude Sperm, Whale or Menhaden Oils, but, with supplies of each very closely under control, prices are firmly held. In the manufactured products there is a very fair distributive movement at about former rates.

Spirits Turpentine.—The local movement has been of merely fair volume and reports from the Southern centers note only a fair seasonable movement there. Prices have averaged somewhat higher, however, and the market at the close looked quite firm at 34½¢ @ 35¢, as to style of package.

A new tariff on pig iron, to take effect January 16, has been issued by the Queen and Crescent Route. The rates from some of the more important sections in the South to points in the North are given below:

To	From Rockwood and Dayton, Tenn.	From Chattanooga, Tenn.	From Birmingham District.
Allentown, Pa	$4.67	$5 63	$5.88
Bellefonte, Pa	4.97	.....	5.07
Bethlehem, Pa	5.12	.....	5.22
Birdsboro, Pa	4.51	....	4.56
Bloomburg, Pa	4.87	.....	4.97
Boonton, N. J	5.85	6.05	6.17
Catasauqua, Pa	4.67	...	4.77
Chester, N. J	6.19	.....	6.29
Chickies, Pa	4.06	.....	4.16
Conshohocken, Pa	4.67	.....	4.77
Danville, Pa	4.45	.....	4.55
Duluth, Minn	5.19	5.39	5.64
Easton, Pa	5.23	....	5.33
Elmira, N. Y	4.77	4.97	5.06
Harrisburg, Pa	3.76	.....	3.86
Lancaster, Pa	4.21	....	4.31
Minneapolis, Minn	5.19	5.39	5.64
Pottstown, Pa	4.52	.....	4.56
Pottsville, Pa	4.82	.....	4.92
St Paul, Minn	5.19	5.39	5.64
West Superior, Wis	5.19	5.39	5.54
York, Pa	4.06	.....	4.16

The Mexican Government has sent out a new order increasing the export duty on high grade silver-lead ores to $4.46 on every $100 of ore running more than 90 ounces to the ton. The consequence is a blockade of ore at El Paso.

President Greenhut of the Chicago Whisky Trust, so far from being disturbed by orders from the Attorney-General at Washington to commence suit for violation of the Sherman Anti-Trust law, should evidence warrant, claims to be doing business in a legitimate manner.

Steel Alloy Alarm Bell.

C. S. Bell & Co., Hillsboro, Ohio, for whom John H. Graham & Co., 113 Chambers street, New York, are agents, are introducing an alarm bell, as illustrated herewith. The bell hangs rigidly to an iron arch, and the arch is bolted to iron uprights in such a manner as to make the structure very substantial. To these uprights are attached the sheave

Steel Alloy Alarm Bell.

wheels over which the ropes pass, thus completing the outfit. The bells are made from 30 to 54 inches in diameter, and weigh from 340 to 2125 pounds. The range of weights of bell and mountings is from 555 to 2985 pounds. The improvements made in this class of bells are referred to as of great importance, as they greatly facilitate their erection and operation. Each bell is complete in itself, only requiring that the bell be placed on a platform in the belfrey and that the ropes be attached, when it is ready for use. The point is made that in the use of large bells for alarm purposes, as heretofore erected, the pull of the rope was too great for one man, while in the improved rigging the pull is less than 2 feet, and one man can ring the largest bell with ease. It is stated that by the use of a double-headed clapper, as used in the alarm bell, the pull of the rope is shortened, preventing the breaking of the bell by excited persons.

Ferris' Cool Handle Sad Iron.

W. M. Ferris, 2710 Chestnut street, St. Louis, Mo., is introducing a sad iron, as illustrated herewith. It is stated that the

Ferris' Cool Handle Sad Iron.

coil is so arranged that in making the circle at either end of the handle it does not touch, and as a result the heat is thrown off and does not convey to the handle, as it otherwise would. The claim is made that it is cooler than any fixed handle, and that it never gets hot enough to burn the holder; also that under many circumstances the handle remains cool enough to use without a holder. When the iron is not heated too hot on a stove for use on clothing it is claimed that it can be lifted by the bare handle, or if a heater is used on a gas or gasoline stove the handle cannot get so hot as to burn the hand.

Bank Outside Gate.

Ludlow-Saylor Wire Company, St. Louis, Mo., have recently manufactured and erected an outside door or gate for the Third National Bank of that city. It is made of black wrought iron, light and graceful in construction, the design harmonizing with the surrounding work. The design was made and submitted by Ludlow-Saylor Wire Company in the face of strong competition. It is referred to as a very handsome piece of work, and as having been favorably spoken of in various quarters. The above company advise us that they are in position to figure on work of this kind, as well as on brass, copper or any kind of metal for interior or exterior decorations.

The Gurney Refrigerator.

The Gurney Refrigerator Company of Fond du Lac, Wis., furnish the accompanying sectional view of their refrigerator. It shows the construction of the box

The Gurney Refrigerator.

and the position of the removable galvanized ice compartment. It will be seen from this cut how readily the ice compartment can be taken out to be cleaned. The system of air circulation is also made plain. By the operation of natural laws, here given full play, the cold air descends to the provision chamber, passing freely on all sides of the ice compartment, while the warmer and lighter air thus displaced arises to the ice and in its turn falls to the provision chamber. The ice is not permitted to touch the zinc side walls of the refrigerator, hence there is no condensation on the back of them. The five walls used are plainly shown. They consist of the outside case of ash panel work, a heavy packing of mineral wool, a wall of inodorous rosin-sized paper, a wall of matched lumber and a wall of zinc, soldered perfectly air and water tight.

James Gayley has lined the hearth and bosh of one of the Edgar Thomson furnaces with carbon brick.

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CURRENT HARDWARE PRICES.

JANUARY 27, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00.....50&10&2%
North's.....list net @10%
Zimmerman's—See Fasteners Blind

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11@11½¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Chenev Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers. Apple, &c

Augers and Bits—

Douglass Mfg. Co. } 70&10@70 & 10&5%
Wm. A. Ives & Co. }
Humphreysville Mfg. Co. }
French, Swift & Co. (F. H. Beecher, } 70&10@70
P. S. & W. Co. } & 10&5%
Rockford Bit Company. }
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 92½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.35&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....20%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....80&10%

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....25&10%
Jee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co....30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—

Ives } 33⅓ @
French, Swift & Co. } 33⅓&10%
Douglass' }
Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common ₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 25¢@30¢
Awls, Shouldered Brad..₩ gr. $1.30@1 40
Awls, Handled Brad...₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@1 20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—

No. 1...3½@@3½,No. 2, 5@@5½
Nos. 7 to 14.....6 &10% } 3% cash
Nos. 15 to 18.....47½% }
Nos. 19 to 22.....70% }
Concord Axles, loose collar.....4 4@6¢
Concord Axles, solid collar.....5½@7¢
National Tubular Self-Oiling.....
33⅓&@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars.

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...
₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.).....
₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky, Durham.....70&10
Dodge, Genuine Kentucky...70@70&10%
Texas Star.....50&10@50&10&5%

Door-

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....60&10&2%

Electric,

Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—

Light Brass.....70&10%
Extra Heavy.....70
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10@60&10&5%
Molders'.....40&10@5%
Hand Bellows.....40&10@40&10%

Belting, Rubber—

Common Standard.....70@70&10&5%
Standard.....70@70&5%
Extra.....60@60&10%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889...
70&10@—%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.

Wood Lined Crystal.....50%
Oxidized.....45%
Embossed.....50%
Paper Lined Zinc.....55%
Crystal.....55%
Embossed.....55%
New Tacoma.....55%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....70&10&12½&2%
Genuine Eagle, Norway, list Oct., '84...
80@80&10%
Phila. pattern, list Oct. 7, '84..75@75&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....
75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890.....
75&10@75&10&5%

Door and Shutter—

Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)...65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...60&10%
Wr't B.K.Flush. Com'n " ...55&10%

Stove and Plow—

Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Ring.....30&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....30&10@30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2¾¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25@
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.1
Barber's,
Nos. 10 to 16.....50@50&10%
Nos. 30 to 33.....50@50&10%
Nos. 40 to 63.....50&10@50&10&5%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....60&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain.
Regular list.....65@70%
Larger 6's list.....66⅔@66⅔&10%
Shelf, fancy.
Sargen 's list.....66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-	Inch.....	9	10	9x11
Basting.	Per doz.	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz $12, 33⅓&

Buckets, Well.

Galvanized—

Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad.....₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band.....$3.7
Helwig's Wired Top.....₩ doz $4.0

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's'.....60
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint, } ..70&10
Loose Joint, Japanned. } @75%
Loose Joint, Jap. with Acorns. }
Parliament Butts. }
Mayer's Hinges. }
Loose Pin, Acorns. }
Loose Pin, Acorns, Japanned. }
Loose Pin, Acorns, Japanned, Plated Tips. }

Wrought Steel—

Fast Joint, Narrow. } .70&10
Fast Joint, Lt. Narrow. } @75%
Fast Joint, Broad. }
Loose Joint, Broad. }
Table Butts, Back Flaps, &c. }
Inside Blind, Regular. }
Inside Blind, Light. }
Loose Pin. }
Bronzed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Tee—

Gautier, One Prong, Blunt.....5½@6%
Burke's, One Prong, Blunt.....5½@6%
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers Can.

Caps—

Percussion, ₩ 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....
47@50¢
Musket Waterproof, 1-10's.....50&55¢
G. D.....27@30¢
A. B. Genuine Imported.....45¢
Eley's E. B.....50¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00.....
2%
All other Primers, $1.20.....2%

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File.....25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....
15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Casters—

Bed.....	Brass	55@55&10%
Plate	Others	60@60&10%
Shallow Socket		
Deep Socket		40&10%
Yale Casters, list May, 1884		30&10@40%
Yale, Gem		60@60&5%
Martin's Patent (Phœnix)		45&10@50%
Payson's Anti-friction		70%
Payson's Truck		70%
Giant Truck Casters		30%
Stationary Truck Casters		50&10%
Socket Truck Casters		50%

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains. List revised April 21, 1890.....60@60&10%
American Coil, in cask lots,
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
$7 60 5.45 4.45 3.80 3.65 3.50 2.40 3.25
Less than cask lots, add ½¢@½¢ ₩ ℔.
German Coil, list Oct. 6, 1890..60@60&5%
German Halter Chain, list Oct. 6, 1890 60@60&5%
Covert Halter.....60&2%
Covert Traces.....35@3%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White, case lots, ₩ gr 50¢; small lots 55@56¢
Red, case lots...₩ gr 67¢; small lots 77@78¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.

P. S. & W.		
New Haven		
Witherby		.75 @ 75&10 %
Mix		
Ohio Tool Co.		
Douglass		75@75&5%
Buck Bros.		30%
Merrill		60&10@60&10&5%
L. & I. J. White		30@30&5%

Tanged and Miscellaneous.

Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@16%

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓&5%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75 15 gal. $3.00 20 gal., $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40@10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..20&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 6¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list. 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
American Curry Comb Co..New prices in preparation.

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 12 @ 12¢
White Cotton Braided, fair.₩ ℔, 24½@25¢
Common Russia Sash.....₩ ℔, 12½@13¢
Patent Russia Sash.....₩ ℔, 14¢
Cable Laid Italian Sash.....₩ ℔, 21@22¢
India Cable Laid Sash.....₩ ℔, 12¢
Silver Lake—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring, Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢..30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White.₩ ℔, 28¢.10%

Wire Picture.

Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's ₩ doz.....40&5%
Nos.... 100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.... 11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos.... 1 2 3 4 B 5
Each....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Great American Meat Cutter.....30%
Nos.... 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $3.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos.... 1 2 3
$22.00 $30.00 $40.00
Home No. .....₩ doz $26.00, 55&10%

Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 .....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's. ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $10.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. $9.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger.....₩ doz $15 00
Imperial.....₩ doz $7.50

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Cleveland.....50&10&5%
Diamond, W. & B.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%
Morse.....50&10&5%
New Process.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos, 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50&75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔.....	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔...	4½¢	5½¢	2½¢
¼ kegs, ₩ ℔...5 ¢		5½¢	3 ¢
10-℔ cans, 10 in case.....6 ¢		6¾¢	5 ¢
10-℔ cans, less than 10....10 ¢		10 ¢	

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@
Cork Lined.....60&10&10%
Burnside's Red Cedar.....70&5@70&10%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $36.00.....30&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List..65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. Gem, copper reservoir, 8.50

Fuse—Dia. 12½%. ₩ 1000 ft

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.35
Single Taped Fuse, for wet ground.. 3.35
Double Taped Fuse, for very wet gr. 4.35
Triple Taped Fuse, for very wet gr.. 5.40
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....30@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70&70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@8 0
Family, regular list.....60%
Family, Cleveland Stone Co.....20 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00..45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.

Covert's, Rope, Jute.....6 &10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Verree.....50@50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail....40&12½%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&5%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 ℔ and under.....₩ ℔ 40¢
3 to 5 ℔.....₩ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₩ ℔ 30¢
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods.

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 13¢; No. 6, 10¢; No. 2 and No. 4 Reversible, 18¢.
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.....	0	1	2	3	4
Per doz....	$0.90	1.00	1.10	1.35	1.50

60&10&

Roggin's Latches.....₩ doz 30¢@3
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62 · Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, &c... 40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
} 40&10@50
I. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 2 75
Auger, assorted.....₩ r 5.00 } 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.35
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Seed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50&50&10%
Victor, No. 1, $16.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10&60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10&40&10&5%
May.....50&5&50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%
Pendulum, Payson's.....40%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's } 40 & 10 @ 50&5 %
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son.
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
Collins.....10%
Schulte, Lohoff & Co.....50&50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.40, 60%
N. E.....₩ doz $7.00, 55%
N. E. Reversible.....₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ doz $5.00, 55&10%
Automatic.....₩ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1886.....2%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent.....40%
Acme, C. S., Empire and Crown, Hero and Monarch, American, Gem, and Star, Oxford, Wiles', Devore's, Rex, Royal, Reliable, Champion, Stearn's, Samson, ₩ gross } 30% 25&10% 20% 55% 20% 20% 10% 40% 40% 60% 60% 50&10% $14.00 } Extra 5@10% often given.

Wrought Iron Hinges.

List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap & T.....50@50&10%
Screw Hook and Strap { 6 to 12 in., ₩ D. 4¢; 14 to 20 in., ₩ D. 3½¢; 22 to 36 in., ₩ D. 3¢
Screw Hook and Eye.... { ⅛ in., ₩ D 7½¢; ⅜ in., ₩ D 5½¢; ¾ in., ₩ D 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₩ D.....5¢; over 12 in., ₩ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } Am. Axe and Tool Co., S. & O. Pat. } 50&10&5 @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ doz $18.....60%

Bit.

Extension,
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list..... } Bird Cage, Reading..... } Clothes Line, Sargent's list.. } Clothes Line, Reading list. 60&10%
60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.35
Cotton Pat. (N.Y. Mallet & Handle W'ks).
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10%
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@40&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80@80&10%
Atlas, Coat and Hat.....60@60&10%
Bright Wire Goods, see *Wire*.

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3½¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8¼¢, 15%
New England.....6¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 19 @ 21¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W.M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.30, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby, P. S. & W., Mix, New Haven } .75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ doz $11.00@$11.50
Heath's.....₩ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ doz. $7.00 @ $8.00

Mincing—

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....30&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ doz $3.00, 25%
Buffalo Double Adj'table.₩ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture, Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.—
Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ doz.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular. ₩ doz $3.60
3-inch Bull's-eye Police regular. ₩ doz $3.90
2¾-inch Bull's-eye Police flash light. ₩ doz $4.00
3-inch Bull's-eye Police flash light. ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....66⅔&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....25%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....60&10&5%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....35%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 19 19 20
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50, 30%

Links, Open.

Terry's—per gro.:

Nos.....	1	2	3	4
	$6 00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....40&10%
Stoddard Lock Co.....30%
"Champion" Night Latches.....80&33⅓%
Barnes Mfg. Co.....40%
Eagle and Corbin Trunk.....40@40&10%
"Champion" Cab. and Combin...25&2%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889.....65&10@70%
Mallory, Wheeler & Co., list July, '88..... Much lower net prices often made.
Sargent & Co., list Aug. 1, '88.....
Reading Hardware Co., list Feb. 2, '88.....
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Delts Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Delts.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Blaymaker Barry & Co.
No. 1010 line.....35&5%
No. 41 line.....45&10%
No. 91 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&5%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Lieseche's, No. 100, ₩ gr $8; 105, $10..80%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Glan', l'st Jan. 1892.....75%

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ doz, $1.75; ₩ gross.....$17 00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Ide's Pat.	5.50	6.75	4.00	40&10%
Jennings	5.50	6.75	4.50	45&10%
Other Machines	2.35	2.75		
Phillips' Patent with Augers	7.00	7.50		
Miller's Falls		7.50		25%

Fluting.

Knox, 4¼-inch Rolls.....$3.25 each } Knox, 6-inch Rolls.....$3.60 each } 35%
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....25%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ doz 15 90.....40%
Shepard Hand Fluter, No. 110 ₩ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₩ doz $8.00.....40%
Clark's Hand Fluter, ₩ doz $15.00.....35%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%
Buffalo.....₩ doz $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₩ doz No. 2, $45 No 3 $48

Mallets.
Hickory.....30&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
S. & L. Block Co., Hickory & L. V. ..30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₩ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz..... $2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888, 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros..... 20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Pennsylvania, New Model, Excelsior, Continental, &c..... 60@60&5%
Philadelphia..... 60&10%
Perfection..... 60&10@60&10&5%
Easy..... 60&10@60&10&5%
Bay State..... 60&10@60&10&5%
Other Machines..... 60&10&5@70%

Muzzles—
Safety..... ₩ doz, $3.00, 25 %

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89..75&10@80%
Tack Mfrs.' list..... 70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$1.95 @ $2.00

Horse—

Nos.	6	7	8	9	10
Ausable....	28¢	26¢	25¢	24¢	23¢.
					40&5&5&2%
Clinton, Fin..	19¢	17¢	16¢	15¢	14¢..... 30%
Essex.....	28¢	26¢	25¢	24¢	23¢.
					40&5&5&2%
Lyra.....	19¢	17¢	16¢	15¢	14¢..... 30 %
Snowden	19¢	17¢	16¢	15¢	14¢..... 30 %
Putnam.....	23¢	21¢	20¢	19¢	18¢.
			1000 ℔ in year 15%		
Vulcan.....	23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢.
					25@25&5%
Globe.....	23¢	21¢	20¢	19¢	18¢.
					20&5&5%
Boston.....	23¢	21¢	20¢	19¢	18¢.
					20&5&5%
A. C.....	25¢	23¢	22¢	21¢	21¢.
					25&10@33⅓&5%
C. B.-K.....	25¢	23¢	22¢	21¢	21¢.
					25&10@33⅓&5%
Maud S.....	25¢	23¢	22¢	21¢	21¢.
					40&10 %
Champlain ..	28¢	26¢	25¢	24¢	23¢.
					25&10&10%
Saranac.....	23¢	21¢	20¢	19¢	18¢...30&10%
Champion ..	25¢	23¢	22¢	21¢	20¢.
					10&10&10%
Capewell....	28¢	26¢	5¢	24¢	23¢.
					35&5&35&10%
Star.....	23¢	21¢	20¢	19¢	18¢.
					10&10@10&12½%
Anchor.....	23¢	21¢	20¢	19¢	18¢..... 35%
Western....	23¢	21¢	20¢	19¢	18¢...40&10%
Empire Bronsed.....					14 ₩ ℔.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent..... 40%

Nail Pullers.—See Pullers, Nail.
Nail Sets.—See Sets, Nail.
Nut Crackers.—See Crackers, Nut.
Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed.....	5.35¢	5.95¢ off list.
Cold Punched....	5.00¢	5.10¢ off list.

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—
Best or Government.... ₩ ℔ 7@7¾¢
U. S. Navy..... ₩ ℔ 6@6¼¢
Navy..... ₩ ℔ 5¼¢@6¢

Oilers—
Zinc and Tin ..... 65&10@70&5%
Brass and Copper .....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc..... 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc..... 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₩ gro. $2
Steel, Draper and Williams..... 50%

Openers, Can.
Messenger's Comet..... ₩ doz $3.00, 25%
American..... ₩ gross $2.75@$3.00
Duplex..... doz 25¢, 15@20%
Lyman's..... ₩ doz $3.75, 20%
No. 4 French..... ₩ doz $2.25, 55@60%
No. 5, Iron Handle..... ₩ gr $6.00, 45@50%
Eureka..... ₩ doz $2.50, 10%
Sardine Scissors..... ₩ doz $2.75@3.00
Star..... ₩ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50. 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50.....40%
World's Best, ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00..... 50&10%
Universal, ₩ doz $3.00..... 55&5%
Domestic, ₩ doz $2.50..... 45%
Champion ₩ doz $2.00..... 50%

Packing, Steam—
Rubber—
Standard..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard..... 50%
N. Y. B. & P. Co., Empire..... 60%
N. Y. B. & P. Co., Salamander..... 25%
Jenkins' Standard. ₩ ℔ 80¢....25@25&5%
Miscellaneous—
American Packing.....10¢@11¢ ₩ ℔
Russia Packing ..... 14¢ ₩ ℔
Italian Packing ..... 13¢@14¢ ₩ ℔
Cotton Packing ..... 15¢@17¢ ₩ ℔
Jute.. ..... 7¢@8¢ ₩ ℔

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₩ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₩ dz.		3.00	3.25	3.75
Helwig's.....		2.50	2.75	3.00
Sidney Shepard & Co.....		2.35	2.85	3.00
Iron Clad		2.50	2.75	3.00
Fire Buckets.....		2.75	3.25	3.50

Buckets, see Well Buckets.
*Indurated Fibre Ware—*25%
Star Pails, 12 qt ..... ₩ doz $5.40
Stable and Milk, 14 qt..... ₩ doz $6.00
Fire Pails, deep..... ₩ doz $5.40
" round bottom.... ₩ doz $7.80
Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails.....	6.00	6.50
Horse Pails	5.00	
Buggy Pails.....	4.00	
Slop Jars (bal. trap).....	8.00	9.00
Chamber Pails, 14-qt.....	6.50	7.50

Pans.
Dripping.
Small sizes..... ₩ ℔ 6¼¢
Large sizes..... ₩ ℔ 5½¢
Silver & Co. (Covered)..... 40%
Fry—
Standard List:

No.....	0	1	2	3	4
₩ doz..	$3.00	$3.75	$4.25	$4.75	$5.25
No.....	5	6	7	8	
₩ doz,.....	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans ..... 60&10%
Dust—
Steel Edge, No. 1..... ₩ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886..... 50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance..... ₩ doz $4.75
Baldwin..... ₩ doz 5.25
Bonanza..... each 5.00
Daisy..... ₩ doz 4.00
Dandy..... each 7.50
Eclipse..... ₩ doz 4.25
Eureka, 1888..... each 16.00
Family Bay State..... ₩ doz 12.00
Favorite..... ₩ doz 5.00
Gold Medal..... ₩ doz 4.00
Ideal..... ₩ doz 4.00
Improved Bay State.. ₩ doz 27.00 @ 30.00
Little Star..... ₩ doz 4.50
Monarch..... ₩ doz 13.50
New Lightning..... ₩ doz 5.50
Oriole..... ₩ doz 4.00
Penn..... ₩ doz 4.00
Perfection..... ₩ doz 4.00
Pomona..... ₩ doz 4.00
Rocking Table..... ₩ doz 6.00
Turn Table..... ₩ doz 4.50
Victor..... ₩ doz 13.50
Waverly..... ₩ doz 4.00
White Mountain..... ₩ doz 4.00
72..... ₩ doz 4.25
78..... ₩ doz. 7.00
Potato—
White Mountain ..... ₩ doz $4.50
Antrim Combination..... ₩ doz $5.50
Hoosier..... ₩ doz $13.50
Saratoga..... ₩ doz $5.50

Pencils—
Faber's Carpenters'..... high list 50%
Faber's Round Glit..... ₩ gro $5.25
Dixon's Lead..... ₩ gro $4.50
Dixon's Lumber..... ₩ gro $6.75
Dixon's Carpenters' 10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00..... 60&10@60&10&5%

Picture Nails.—See Nails, Picture.
Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s..... 60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co... 50&10&50&10&5%
Curtain—
Silvered Glass..... net
White Enamel..... net
Escutcheon.
Iron, list Nov. 11, 1885. .50&10@50&10&5%
Brass..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain ..... 57½@60%
1¼ and under, Galvanized..... 47½@50%
1½ and over, Plain..... 67½@70%
1½ and over, Galvanized..... 55@57½%
Boiler Tubes,
Sizes up to 2¾ in. inclusive..... 55%
Sizes 3 in. and larger 65%
Casing..... 55%
Inserted Joints Casing..... 50%
Steel Boiler Tubes 30%

Planes and Plane Irons—
Wood Planes—
Molding..... 40&10%
Bench, First Quality..... 50&10%
Bench, Second Quality..... 55&10%
Bailey's (Stanley R. & L. Co.). .. 50&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10%
Victor Planes (Stanley R. & L. Co.). ..... 50&10%
Steer's Iron Planes..... 35@35&10%
Merrien Mal. Iron Co.'s..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co..... 50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co..... 50@50&5%
Plane Irons—
Butcher's..... $5.00@$5.25 to 2
Buck Bros 30%
Auburn "Thistle.....
Ohio..... } ...30&10%
Sandusky.....
S. & I. J. White..... 25%
Stanley R. & L. Co ..... 50&10%

Plates.
Felloe ..... ₩ ℔ 6¢@6½¢
Button's Patent..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₩ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .50@50&10%
Lindsay's Giant..... 40%
Gas Pliers..... 60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel..... 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters..... 20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 75&10@75&10&5%
Disston's..... 50%
Pocket Levels..... 70&10@70&10&10%
Davis Iron Levels..... 30%
Davis' Inclinometers ..... 10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₩ doz, No. 1, $6.00; No. 2, $9.00..... 25%
Silver & Co., 6-Ring.. ₩ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L..... ₩ doz $6.00
Bishop's O. K..... ₩ doz $5.25
Bishop's Pioneer..... ₩ doz $3.75
Bishop's American..... ₩ doz $2.75
Eagle, Double Stale..... ₩ doz $5.75
Eagle, Single Stale..... ₩ doz $3.75
Buckeye, Single Stale..... ₩ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's..... 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₩ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₩ doz $72.00; Nickeled, $84.00..... 25%
J. P. Lovell's Police Goods..... 25%

Polish, Metal.
Prestoline..... 30%
Prestoline Paste..... 33⅓%
Gaston's Silver Compound..... 33⅓%

Polish, Stove.
Joseph Dixon's..... ₩ gro $6.00, 10%
Gem..... ₩ gro $4.50, 10%
Gold Medal..... ₩ gro $6.00, 25%
Mirror ..... ₩ pro $6.00, —%
Lustro ..... ₩ gro $4.75
Ruby..... ₩ gro $3.75
Rising Sun, 5 gro lots ..... ₩ gro $5.50
Dixon's Plumbago..... ₩ ℔ 8¢
Boynton's Noon Day, ₩ gro 13.00
Parlor Pride Stove Enamel.. ₩ gro
Yates' Liquid, 2 3 5 10 gal....
₩ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₩ ℔ 12½¢
Jet Black ..... ₩ gro $3.50
Japanese..... ₩ gro $3.50
Fireside..... ₩ gro $2.50
Diamond O. K. Enamel..... ₩ gro $19.00
Bonnell's Liquid Stove Polish.. ₩ gro $9.00
Bonnell's Paste Stove Polish.. ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₩ gro $6.00
Crown Paste ..... ₩ gross, $7.20
Crown Paste, in 5 and 10 ℔ pails ₩ ℔ 12¢
Black Flag ..... ₩ gross, $7.20
Black Flag, 5 and 10 ℔ pails,.... ₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro. $8.00
Diamond Stock Nickel Cleaner.. ₩ gro $10.20

Poppers, Corn—
Round or Square, 1 qt.. ₩ gr $10.00@10.50
Round or Square, 1½ qt.. ₩ gr $15@15.50
Round or Square, 2 qt.. ₩ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned..... 40&10@40&10&5%
Enameled..... 40&10@40&10&5%
Family, Howe's "Eureka"..... 40%
Family, L. F. C.'s "Handy" 50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co..... 20&10@30%
Henis..... ₩ doz $3.50
Shepard's Queen City 40%
Silver & Co..... ₩ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton..... ₩ doz $13.00, 33⅓%
Curtiss Hammer..... ₩ doz $9.00
Giant, No. 1..... ₩ doz. $13.00, 10%
Giant, No. 2..... ₩ doz. $15.00, 10%
Pelican..... ₩ doz, $9.00, 25%
Eclipse..... each, $2.00 net

Pulleys—
Hot House, Awning, &c..... 60&10%
Japanned Screw..... 60&10%
Brass Screw..... 60&10%
Japanned Side..... 66⅔&10%
Japanned Clothes Line..... 60&10%
Empire Sash Pulley..... 55@60%
Moore's Sash, Anti-Friction..... 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron..... 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₩ doz $12.00..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₩ dos...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality.... ₩ doz $2.50@2.60
Spring, Leach's Pat..... 15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P. S. & W. Co., ₩ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving..... 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door. Wr't Brass, ₩ ℔ 35¢..... 15%
Sliding Door, Bronsed Wr't Iron.. ₩ ft. 7¢
Sliding Door, Iron, Painted, ₩ foot 4¢, 40%
Barn Door. Light in. ½ ¾ ¾
Per 100 feet..... $2.00 2.50 3.00 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25..net

Terry's Steel Rail, ₩ foot..... 4½¢
Victor Track Rail, 7¢ ₩ foot..... 50&2%
Carrier Steel Rail, ₩ foot ..... 4½¢
Moore's Wrought Iron..... 25%

Rakes—
Cast Steel, Association goods...66⅔&70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable..... 70@70&5%
Gibbs Lawn Rake..... ₩ doz $4.90
Canton Lawn Rake..... ₩ doz $3.75
Favorite Lawn Rake..... ₩ doz $4.40
Ft. Madison Prize Bow Brace and Peerless 60%
Fort Madison Steel Tooth Lawn Rake, $6.00..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAAI, new list..... net
Jordan's Old Faithful, new list..... net
Galvanic..... ₩ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co..... 55%
Sargent's..... 66⅔&10@70&5%
Hotchkiss' low list..... 30%
Humason, Beckley & Co.'s..... 70&10%
Peck, Stow & W. Co's..50&10&50&10&10%
Elirich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers..... ₩ doz $2.00
Top of the Hill Rings..... ₩ doz $1.25
Hill's Improved Ringers..... ₩ doz $1.25
Hill's Old Style Ringers..... ₩ doz $1.12½
Hill's Tongs..... ₩ doz $3.00
Hill's Rings..... ₩ doz bxs $1.00
Perfect Rings..... ₩ doz bxs $1.50
Perfect Ringers..... ₩ doz $2.15@$2.25
Blair's Hog Ringers..... ₩ doz $2.00
Blair's Hog Rings..... ₩ doz 96¢@$1.00
Champion Ringers..... ₩ doz $2.00
Champion Rings, Double..... ₩ doz $2.25
Brown's Ringers..... ₩ doz $2.00
Brown's Rings..... ₩ doz $1.15@1.25
Electric Hog Rings.... ₩ doz boxes $1.50
Electric Hog Ringers ..... ₩ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87..... 40%
Copper..... 60&10@60&10&25%
Coppered Iron, Bettina Brand..... 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut ..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction..... 55%
Union Barn Door Roller 70%

Rope.
Manila, 7-16 in diam. and larger ₩ ℔ 12½¢
Manila..... ¾ in. ₩ ℔ 12½¢
Manila..... ½ and 5-16 in. ₩ ℔ 13½¢
Manila Tarred Rope..... ₩ ℔ 11½¢
Manila, Hay Rope..... ₩ ℔ 12½¢
Sisal.....7-16 inch and larger ₩ ℔ 9½¢
Sisal..... ⅜ in. ₩ ℔ 9½¢
Sisal..... ½ and 5-16 in. ₩ ℔ 10½¢
Sisal, Hay Rope..... ₩ ℔ 9½¢
Sisal, Tarred Rope..... ₩ ℔ 8½¢
Sisal, Medium Lath Yarn..... ₩ ℔ 8½¢
New Zealand.. 7-16 in. & larger ₩ ℔ 8½¢
New Zealand..... ¾ inch, ₩ ℔ 9½¢
New Zealand, ½ and 5-16 inch, ₩ ℔ 9½¢
New Zealand, Hay Rope.. .... ₩ ℔ 8½¢
New Zealand, Tarred Rope.... ₩ ℔ 8½¢
Note.—Manufacturers' prices on above 1¢ ₩ ℔ less, f. o. b. factory—less 1½ % for cash.
Cotton Rope..... ₩ ℔ 13½@16¢
Jute Rope..... ₩ ℔ 6½@7¢
Wire—
List May 1, 1886.
Iron..... 32½&2½%
Iron, Galvanized..... 40&2½%
Cast Steel..... 40&2½%

Rules—
Boxwood..... 80&10&10@80&10&10&10%
Ivory..... 50@50&10%
Starrett's Rules and Straight Edges, Steel..... 25&10%

Sad Irons—See Irons, Sad.
Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.
Sash Locks—See Locks, Sash.
Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular ....45@45&5%
Disston's Cross Cuts..... 45@45&5%
Disston's Hand..... 20@20&5%
Woodrough & McFarlin.
Hand, Panel and Rip..... .25@25&5%
Narrow Champion Cross Cuts with Handles, ₩ foot..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₩ foot..... 29@31¢
One Man Champion Cross Cuts, ₩ foot..... .37@40
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip..... 30@30&5%
Narrow Champion Cross Cuts with Handles, ₩ foot..... 18@20¢
Champion Thin Back Cross Cuts, ₩ foot..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₩ foot..... 29@31¢
One Man Champion Cross Cuts, ₩ ft. 37@40
Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₩ foot 70¢
Atkins' Special Steel Dexter X Cuts ₩ foot 50¢
Atkins' Special Steel Diamond X Cuts ₩ foot 32¢
Atkins' Champion and Electric Tooth X Cuts..... ₩ foot 30¢
Atkins' Hollow Back X Cuts. .₩ foot 20¢
Atkins' Mulay, Mill and Drag..... .40%
Atkins' One-Man Saw, with handles, ₩ foot 40¢
Peace Circular and Mill..... 45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts..... .45@45&5%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts..... .45@45&5%
Richardson's Hand, &c..... 25@25&5%
C. E. Jennings & Co., Hand, Panel and Rip ..... 25@25&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....35%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ dos $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Richie Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00, 10%
Box, 2 Handle.....₩ doz $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—

List January 1, 1891.
Flat Head Iron.....70 %
Round Head Iron.....65 %
Flat Head Brass.....70 %
Round Head Brass.....65 %
Flat Head Bronze.....70 %
Round Head Bronze.....65 %
Rogers' Drive Screws.....82½&5
} Extra 10 @ 10&5 % of ten given.

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...₩ dos $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point..₩ gr.,$12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ dos $5.00@7.75,

Stillman's Pattern Hand, ₩ dos $3.25; Cross Cut, 5.25.....45@50%
Common Lever .....₩ dos $2.00, 45@50%
Merrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's. No. 0, $8.00; No. 1, $15, 15@20%
Nash's .....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$18.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star. 25%
Leopold.....40&10@50%
Atkin's Lever.....₩ dos No. 1, $6.00
Atkin's Criterion.....₩ dos No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ dos $7.00
Chieftain Co.'s Royal.....₩ dos $7.50
Crescent.....₩ doz $3.00

Sharpeners, Knife.

Parkins.

Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobola.₩ doz $900 40%

Shaves, Spoke

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ dos $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ dos $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality .....80@80&10%
Second quality.....50&10@50&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears 10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co .....60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3½ to 9 in, ₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ dos $18.00, 20&10%
Disston's Pruning Hook, ₩ dos $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ dos $3.75@4.00
Henry's Pruning Shears, ₩ dos $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ dos $12.00, 20%
Dunlap's Saw and Chisel, ₩ dos $5.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....30@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888...50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Rise.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890.....40&10&10@40&10&10&5%

Ship Tools—

L. & L. J. White.....20&5%

Shoes, Horse, Mule, &c.

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory. $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag	$1.37	$1.42
Drop, up to B, 5-℔ bag	.35	.36
Drop, B and larger, 25-℔ bag	1.62	1.67
Drop, B and larger 5-℔ bag	.40	.41
Buck and Chilled, 25-℔ bag	1.62	1.67
Buck and Chilled, 5-℔ bag	40	.41
Dust Shot, 25-℔ bag	2.00	2.05
Dust Shot, 5-℔ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5&7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....50@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&35%
Shaker (Barler's Pat.) Flour Sifters, ₩ dos $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ dos $2.00
Smith's Adjustable Sifters ...₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
E. Covert's Triumph.....33⅓%

Snaths, Scythe.

List.....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver.....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..60&5% cash
Nickel Silver.....50&5%&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....60&7½&5%
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, 39 in ....₩ dos $1.20@1.25
Gray's, ₩ gr., $20.00.....25%
Bee Rod ₩ gr., $20.00.....20@25%
Warner's No. 1, ₩ dos, $2.50; No. 2, $3.30.....50&50&5%
Gem (Coil), list April 19, 1886...10@15%
Star (Coil), list April 19, 1886...20@20&5%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ dos, $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₩ dos, $4.50...65&10%
Hercules.....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron.....
Nickel-Plated.....
} .80&10@80&10&10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₩ dos $2.00
Blair's "Climax".....₩ dos $1.25

Lemon—

Porcelain Lined, No. 1....₩ dos $6.00, 25&20%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ dos $1.70@1.75
Dunlap's Improved .....₩ dos $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ dos $2.50
The Boss.....₩ dos $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King .....40&5%
Hotchkiss Straight Flash....₩ dos $12.00
Silver & Co., Glass .....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ doz $0.75@$1 00
Improved.....₩ dos $4.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ⅜ in. .....₩ ℔ 8@8½¢
Fence Staples, Galvanized.
Fence Staples, Plain.....
} Same price as B'rb Wire. See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....40@40&10%
Butterfield's Goods.....40@40&10%
Lightning Screw Plate.....25@50%
Reece's New Screw Plates.....33⅓&5@40%
Reversible Ratchet.....50
Gardner.....33⅓

Stops, Bench.

Morrill's.....₩ dos $9, 50%
Hotchkiss's.....₩ dos $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ dos $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60.....30%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.35
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 18¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand.....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@22¢
Seneca Stone, Small Wheels..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ dos $2.25
Cast Iron, Steel Points.....₩ dos 80¢
Socket.....₩ dos $1.75
Bullard's.....35@25&10%

Strops, Razor—

Genuine Emerson.....60&60&5%
Imitation " ....₩ dos $3.00, 20&10&5%
Torrey's.....30%
Badger's Belt and Com.....₩ dos $3.00
Lamont Combination.....₩ dos $4.00
Jordan's Pat. Padded, list Nov. 1,'89.50%
Electric.....List net

Studers or Fillers, Sausage—

Miles' "Challenge," ₩ dos $20, 50&50&5%
Perry .....₩ dos, No. 1, $15.00; No. 0, $21.00.....50&5&50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 5.....₩ dos $17.00
Bissell No. 7 New Drop Pan.₩ dos $19.00
Bissell, Grand.....₩ dos $36.00
Grand Rapids.....₩ dos $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ dos $15.00
Jewel.....₩ dos $17.00
Improved Parlor Queen, Nickeled.....₩ dos $27.00
Japanned.....₩ dos $24.00
Excelsior .....₩ dos $22.00
Garland .....₩ dos $18.00
Parlor Queen.....₩ dos $24.00
Housewife's Delight.....₩ dos $15.00
Queen.....₩ dos $16.00
Queen, with band.....₩ dos $18.00
King .....₩ dos $30.00
Weed, Improved.....₩ dos $18.00
Hub.....₩ dos $16.00
Cog-Wheel.....₩ dos $16.00
Easy.....₩ dos $22.00
Monarch.....₩ dos $22.00
Goshen.....₩ dos $21.00
Ladies' Friend.....₩ dos $15.00
Advance .....₩ dos $18.00
Supreme.....₩ dos $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....75 %
American, Tin'd and Cop'd.77½ %
Steel, Bright and Blued.....72½ %
Steel, Tinned and Coppered 75 %
Swedes Iron, Blued.....72½ %
Swedes Iron, Tinned.....75 %
American Iron Tacks.....72½ %
Swedes Iron Tacks—
S. S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....66⅔ %
Lanc., Tinned.....72½ %
Gimp and Lace Tacks—
S. S., Blued .....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....66⅔ %
Lanc., Tinned.....72½ %
Basket and Trimmers' Tacks—
Lanc .....65 %
S. S.....70 %
Hungarian Nails.....66⅔ %
Miners' Tacks, S. S. .....75 %
Miners' Tacks, Lanc.....70 %
Common and Patent Brads..66⅔ %
Leathered Tacks.....20 %
Brush Tacks.....50 %
Looking Glass Tacks.....50 %
Picture-Frame Points.....50 %
Finishing Nails.....66⅔ %
Trunk and Clout Nails—
Black.....65½ %
Tinned or Coppered.....66⅔ %
Basket Nails .....62½ %
Chair Nails.....62½ %
Cigar-Box Nails .....50 %
Tin Capped Nails.....50 %

On many of these goods extra Regular discount 10&2½%, cash. 10@10&10% is often given.

Miscellaneous—

D'ble-Point..120 count85&10@85&10&10%
Double Point, 100 count 90%
Wire Carpet Nails .....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list .....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—St

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20@20&5
Barton's.....20&5
L. & I. J. White.....35
Albertson Mfg. Co.....30
Beatty's.....30@30&5
Sandusky Tool Co.....30@30&5
Chaves, Cincinnati Tool Co.....20

Lumber.
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ dos 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ dos., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ dos, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ dos, 12 ft. $8.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ dos, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ dos $18.00

Saw.
Atkins' Perfection.....₩ dos $12.00
Atkins' Excelsior.....₩ dos $6.00
Atkins' Giant.....₩ dos $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5

Mouse and Rat—
Mouse Wood, Choker, ₩ dos holes, 9@10
Mouse, Round Wire.....₩ dos $1.50 10%
Mouse, Cage, Wire.....₩ dos $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩ dos $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ dos., 90¢; in full cases, ₩ dos.....75¢
Hotchkiss Imp. Rat Killer...₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ dos $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ dos. 55&10%
Douglas'.....₩ dos $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Diston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....30%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls	25¢	31¢
No. 12, ¼ and ½ ℔ Balls	22¢	30¢
No. 18, ¼ and ½ ℔ Balls	20¢	29¢
No. 24, ¼ and ½ ℔ Balls	20¢	29¢
No. 36, ¼ and ½ ℔ Balls	18¢	28¢
No. 264, Mattrass, ¼ and ½ ℔ Balls	52@54¢	
Chalk Line, Cotton, ½ ℔ Balls	25¢	
Mason Line, Linen, ½ ℔ Balls	55¢	
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)	15½¢	
3-Ply Hemp, 1 ℔ Balls	15@16½¢	
3-Ply Hemp, 1½ ℔ Balls	15@15½¢	
Cotton Wrapping, 5 Balls to ℔	15@15¢	
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls	10¢	
Wool	6½@6¾¢	
Paper	13@14¢	
Cotton Mops, 6, 9, 12 and 15 ℔ to dos.	18¢	

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%

Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60%&10%
Hopkins'.....₩ dos $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price per M.

J.M.C.&W.R.A.—B.E., 11 up...	68¢	Dis.30&2
J.M.C.&W.R.A.—B.E., 9&10...	82¢	
U.M.C.&W.R.A.—B.E., 8.....	96¢	
U.M.C.& W.R.A.—B.E., 7.....	$1.10	
U.M.C.&W.R.A.—P. E., 11 up..	1.15	
U.M.C.&W.R.A.—P. E., 9&10..	1.50	
U.M.C.&W.R.A.—P. E., 8.....	1.70	
U.M.C.&W.R.A.—P. E., 7.....	1.80	
Eley's B. E., 11 up.....	$1.70@$1.75	
Eley's P. E., 11@20.....	3.00@3.25	

Wagon Boxes—See Boxes, Wagon

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@60%
Tinned Boilers and S'pans....50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.00
Cuspidors.....		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Indurated Fiber—35%
Spittoons, No. 2, ₩ dos.....$3.40
Basins, Ringed, ₩ dos., No. 2.....3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....1.60
See also *Pails.*

Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton..... } 40&5%
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co.....

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	6	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.2[illegible]

Wire and Wire Goods—
Iron—
Market,
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 9 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔.....5¢
Galvanized Fence, Nos. 3 and 9.....70%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....60%
Malin's Steel and Tin'd on Spools.....60%
Malin's Brass and Cop. on Spools.....50%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30....60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.

Bright Wire Goods—
Standard list.....30&10%

Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—F.o.b. Cars. Dis. 3% cash in 10 days.

	Painted.	Galvanized.
Pittsburgh and Cleveland.	$2.55	$3.05
Allentown, Cincinnati and Joliet....	2.65	3.15
St. Louis.....	2.70	3.20
Keokuk.....	2.75	3.25
Lockport, Baker Perfect..	2.85	3.35
Lawrence and Omaha....	2.90	3.40
San Francisco.....	3.80	4.30

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".... 40&10@50%
Baxter's Diagonal..... 40&10@50%
Coes' Genuine.....50&2%
Coes' "Mechanics'".....50&10&2%
Girard Standard..... 65&10%
Lamson & Sessions' Engineers'.. 60&10%
Lamson & Sessions' Standard.... 70&10%
P. S. & W. Agricultural.... } 75&10@
Girard Agricultural..... } 70&10&5%
Lamson & Sessions' Agric'l..
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$5.00, 50&10%
The Favorite Pocket.....₩ dos $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70%
Walker's.....55&2%
Diamond Steel.....55&2%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&2%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91.2% cash
Lovell Mfg. Co., list Jan. 1, 1892.2 % cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 85@85&10

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	37 @	..
Linseed, City, boiled.....	40 @	..
Linseed, Western, raw.....	35 @	..
Lard, City, Extra Winter..	56 @	..
Lard, City, Prime.....	54 @	..
Lard, City, Extra No. 1....	42½@	45
Lard, City, No. 1.....	37½@	40
Lard, Western, prime.....	54 @	..
Cotton-seed, Crude, prime,	25 @	..
Cotton-seed, Crude, off grades.....	22½@	23½
Cotton-seed, Summer Yellow, prime.....	29 @	30
Cotton-seed, Summer Yellow, off grades.....	27½@	28½
Sperm, Crude.....	70 @	71
Sperm, Natural Spring.....	67 @	70
Sperm, Bleached Spring....	72 @	75
Sperm, Natural Winter.....	73 @	76
Sperm, Bleached Winter....	78 @	81
Whale, Crude.....	43 @	45
Whale, Natural Winter.....	54 @	56
Whale, Bleached Winter....	56 @	58
Whale, Extra Bleached.....	58 @	60
Sea Elephant, Bleached Winter.....	63 @	64
Menhaden, Crude, Sound...	30 @	32
Menhaden, Crude, Southern	.. @	..
Menhaden, Light Pressed..	37 @	38
Menhaden, Bleached W'ter.	38 @	39
Menhaden, Extra Bleached	40 @	42
Tallow, City, prime.....	44 @	45
Tallow, Western, prime....	42½@	..
Cocoanut, Ceylon.....	5½@	5¾
Cocoanut, Cochin.....	6¾@	6¾
Cod, Domestic.....	38 @	40
Cod, Foreign.....	@	..
Red Elaine.....	34 @	36
Red Saponified.....₩ ℔	5 @	5½
Sank.....per gal	35 @	36
Straits.....	36 @	37
Olive, Italian, bbls.....	6 @	65
Neatsfoot, prime.....	55 @	65
Palm, prime, Lagos....₩ ℔	6 @	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7 @	7½
Black, 29 gravity, 15 cold test.....	8 @	8½
Black, 29 gravity, summer,	6 @	6¼
Cylinder light, filtered....	15 @	
Cylinder, dark, filtered	12 @	15
Paraffine, 23½ @ 24 gravity.	13½@	14
Paraffine, 25 gravity.....	12½@	13
Paraffine, 28 gravity.....	8 @	..
Paraffine, red, 23½@24 gr'ty	13 @	15

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00	@24.00
Barytes, Amer. floated...	30.00	@32.00
Barytes, Amer. No. 1....	19.00	@20.00
Barytes, Amer. No. 2....	13.00	@16.00
Barytes, Amer., No. 3....	11.00	@12.00
Blue, Celestial..... ₩ ℔	6 @	8
Blue, Chinese	50 @	55
Blue Prussian.....	25 @	40
Blue, Ultramarine	8 @	25
Brown, Spanish	½@	1
Brown, Vandyke, Amer..	3 @	3½
Brown, Vandyke, English	6 @	8
Carmine, No. 40, in bulk.	3.10 @	..
Carmine, No. 40, in boxes or barrels	3.20 @	..
Carmine, No. 40, in ounce bottles.....	4.20 @	..
Chalk, in bulk.... ₩ ton.	2.00 @	..
Chalk, in bbls..₩ 100 ℔.	33 @	40
China Clay, English.... ₩ ton.	13.00 @	18.00
Cobalt Oxide, prep'd....	2.90 @	....
Cobalt Oxide, black..... lots 100℔.	2.00 @	....
Cobalt, Oxide, black..... less 100℔.	2.65 @	....
Green, Paris, in bulk.....	14 @	15¼
Green Paris, 170 @ 175 ℔ kegs.....	14½@	15¾
Green, Paris, small pack.	16 @	21¾
Green, Chrome, ordinary	8 @	11
Green, Chrome, pure.. ..	22 @	25
Lead, Eng., B.B. white....	8½@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔....	7¼ @	7½
Kegs, lots 500 ℔ to 5 tons....	6¾ @	7
Kegs, lots 5 tons to 12 tons..	6½ @	6¾
Kegs, lots 12 tons and over..	6¼ @	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	@	¼
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	@	2½
Lead, Red, bbls. and ½ bbls....	6¼ @	7½
Lead, Red, kegs.....	6¼ @	7½
Litharge, kegs.....	6½ @	7½
Litharge, bbls. and ½ bbls.....	6¾ @	7¾

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.25 @	1½
Ocher, French Washed.....	1½@	2½
Ocher, German Washed....	1½@	3
Ocher, American.....	½@	1½
Orange Mineral, English...	9 @	9½
Orange Mineral, French....	10 @	10½
Orange Mineral, German ..	9½@	10
Orange Mineral, American.	8 @	8¼
Paris White, English Cliff-stone.....	1.00 @	1.15
Paris White, American.....	70 @	75
Red, Indian, English.....	5½@	7
Red, Indian, American....	2 @	6½
Red, Turkey.....	9 @	14
Red, Tuscan	9 @	11
Red, Venetian, American.. ₩ 100 ℔.	1.00 @	1.25
Red, Venetian, English....	1.00 @	1.50
Sienna, Italian, Burnt and Powd.₩ ℔	5 @	6½
Sienna, Ital., Burnt Lumps	1½@	3½
Sienna, Ital., Raw, Powd..	5 @	6½
Sienna, Ital., Raw Lumps..	2 @	3½
Sienna, American, Raw....	1½@	1¾
Sienna, American, Burnt and Powdered.....	1½@	1¾
Talc, French.....	1½@	1¾
Talc, American..... ..	1 @	1¼
Terra Alba, Fr'ch. ₩ 100 ℔	90 @	1.00
Terra Alba, English	50 @	60
Terra Alba, American No. 1	70 @	75
Terra Alba, American No. 2	40 @	50
Umber, Turkey, Bnt. and Powd..... ₩ ℔	3½@	4
Umber, Turkey Bnt. Ln	2½@	3
Umber, Turkey, Raw and Powdered.....	3½@	
Umber, Turkey, R'w Lmps	2½@	2¾
Umber, Turkey, Bnt. Amer.	1½@	1¾
Umber, Turkey, R'w Amer.	1½@	1¾
Yellow, Chrome.....	10 @	25
Vermilion Americ. Lead..	11½@	12
Vermilion, Quicks'er, bulk.	64 @	66
Vermilion, Quicks'er, bags.	65 @	67
Vermilion Quicksilver, smaller pkgs.....	69 @	71
Vermilion English Import	80 @	85
Vermilion, Imitation, Eng.	8 @	35
Vermilion, Trieste...	87½@	90
Vermilion, Chinese.....	90 @	95
Whiting, Common. ₩ 100 ℔	40 @	45
Whiting, Gilders'.....	50 @	55
Zinc, American, dry....₩ ℔	4½@	5
Zinc, French, Red Seal.....	.. @	8½
Zinc, French, Green Seal..	.. @	8½
Zinc, French, V. M. X.....	.. @	7
Zinc, Antwerp, Red Seal....	.. @	7½
Zinc, Antwerp, Green Seal	.. @	8½
Zinc, German, L. Z. O....	.. @	6¾
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@	11¼
lots less than 1 ton	11 @	11½
Zinc, V. M. in Poppy Oil, Red Seal,.....	.. @	..
lots of 1 ton and over....	10 @	10½
Lots of less than 1 ton....	10½@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls. 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Black, Drop, Frankfort	25 @	30
Black, Drop, English	12 @	15
Black, Drop, Domestic	7 @	10
Black, Lampblack, Best....	20 @	35
Black, Lampblack, Common	7 @	18
Black, Ivory.....	8 @	15
Blue, Chinese.....	30 @	40
Blue, Prussian.....	29 @	45
Blue, Ultramarine.....	12 @	18
Brown, Vandyke.....	7 @	12
Green, Chrome.....	8 @	13
Green, Paris.....	16 @	18½
Sienna, Raw.....	7 @	14
Sienna, Burnt.....	7 @	14
Umber, Raw.....	7 @	10
Umber, Burnt	7 @	10

Putty.

In barrels and ½ bbls....	.01½@	.01¾
In tubs.....	.01⅝@	.01¾
In tin cans.....	.01¾@	.02¼
In bladders.....	.01¾@	.02¼

Spirits Turpentine.

In regular bbls	34½@	..
In machine bbls.....	35 @	

Glue.

Low Grade.....₩ ℔	8 @	10
Cabinet.....	12 @	14
Medium White.....	13 @	15
Extra White.....	17 @	20
French.....	10 @	22
English.....	10 @	15
Irish.....	12 @	..

CURRENT METAL PRICES.

JANUARY 27, 1892.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

IRON AND STEEL.

Bar Iron from Store.

Common Iron: ¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ lb 1.90 @ 2.00¢
Refined Iron: ¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.20¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.40¢
Rods—⅜ and 11-16 round and sq.	₩ lb 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.50¢
"Burden Best" Iron, base price	₩ lb .... 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb.. 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 2.75 @ 3.00¢	3.35 @	¢
17 to 20	₩ lb 3.00 @ 3.25¢	3.35 @ 3.75	¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.60 @ . .	¢
25 and 26	₩ lb 3.35 @	3.60 @	¢
27	₩ lb 3 50 @ 3.62½¢	3.85 @	¢
28	₩ lb 3.65 @ .¢	4.10 @	¢
	B. B.	2d qual.	
Galv'd, 14 to 20,	₩ lb, 4.75 @	4.60 @	¢
Galv'd, 21 to 24,	₩ lb, 5.12 @	5.00 @	¢
Galv'd, 25 to 26,	₩ lb, 5.50 @	5.35 @	¢
Galv'd, 27	₩ lb, 5.90 @	5.70 @	¢
Galv'd, 28	₩ lb, 6.25 @	6.10 @	¢
Patent Planished	₩ lb A 10¢	B, 9¢	
Russia	₩ lb 10½¢ @ 11¢		
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged. Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22 @22¼¢
Straits, Pigs	21 @21½¢
Straits in Bars	23 ¢

Tin Plates.

Charcoal Plates.—Bright.

			Per box.
Melyn Grade	IC, 10 x 14	@	$6.75
" "	IC, 12 x 12	@	7.00
" "	IC, 14 x 20	@	6.75
" "	IC, 20 x 28	@	13.70
" "	IX, 10 x 14	@	8.25
" "	IX, 12 x 12	@	8.50
" "	IX, 14 x 20	@	8.25
" "	IX, 20 x 28	@	16.50
" "	DC, 12½ x 17	@	6.25
" "	DX, 12½ x 17	@	7.75
Calland Grade	IC, 10 x 14	@	6.70
" "	IC, 12 x 12	@	6.95
" "	IC, 14 x 20	@	6.60
" "	IX, 10 x 14	@	7.85
" "	IX, 12 x 12	@	8.20
" "	IX, 14 x 20	@	7.85
Allaway Grade	IC, 10 x 14	@	6.35
" "	IC, 12 x 12	@	6.50
" "	IC, 14 x 20	@	6.35
" "	IC, 20 x 28	@	12.40
"	IX, 10 x 14	@	7.50
	IX, 12 x 12	@	7.80
	IX, 14 x 20	@	7.50
	IX, 20 x 28	@	15.00
"	DC, 12½ x 17	@	6.80
"	DX, 12½ x 17 .. 6.00	@	7.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	@	$5.70
10 x 20	@	8.10
20 x 28	@	11.70
IX, 10 x 14, 14 x 20	@	6.60
BV Grade.—IC, 10 x 14, 14 x 20	@	5.70

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20	@	$5.75
20 x 28	@	10.75
IX, 14 x 20	@	6.87½
20 x 28	@	12.78
Abecarne Grade.—IC, 14 x 20	@	5 50
20 x 28	@	10 75
IX 14 x 20	@	6 50
x 28	@	12 50

Tin Boiler Plates.

IXX, 14 x 28.....112 sheets	@ $13.50
IXX, 14 x 28.....112 sheets	@ 13.75
IXX, 14 x 31.....112 sheets	@ 15.25

Copper.

Duty: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 12 ¢
Ansonia Grade Arizona	@ 11½¢
Ansonia Grade Casting	@ 11 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	23	23	23	24	25	28	30
30		72	22	23	23	23	25	27	31	
36	96		22	23	23	24	26	30	33	....
36		96	22	23	23	25	27	31	35	....
48	96		22	23	24	26	28	32	..	....
48		96	22	23	24	25	27	33	....	....
60	96		22	23	27	27	29	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	..	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, per pound 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

— % discount.

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	4¢ ₩ lb
14 oz	25¢ ₩ lb
12 oz	27¢ ₩ lb

Seamless Brass Tubes.

Net.

Dec. 16, 1891.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	30	26	23	22	21	20	17
15	13	31	26	24	23	22	21	18
16	14	32	27	25	24	23	22	18
17	15	33	28	26	23	24	23	19
18	16	35	29	27	25	24	23	20
19	17	36	30	28	27	26	25	22
20	18-19	37	32	30	29	28	27	24
21	20	39	34	32	31	30	29	27
22	21	41	35	34	32	31	30	29
23	22	43	37	35	34	33	32	32
24	23	46	39	37	36	34	33	34
25	24	49	42	39	38	37	36	38

Copper Tubes, 3¢ ₩ lb additional.

Copper Bronze and Gilding Tube, 8¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	45¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ .. %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23¼	.24¼	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.66
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.76

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam.	.25	.27	.29	.33

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0 30	$0 34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No 15	70¢
No 10	54¢		

60 % @ 10 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forging, &c.

¼ to ¾ inch inclusive	17¢ ₩ lb
Over ¾ to 3½ inches inclusive	16¢ ₩ lb
Over 3½ to 5 inches inclusive	17¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to ¾ inch inclusive	18¢ ₩ lb
Over ¾ to 2 inches inclusive	17¢ ₩ lb
Over 2 to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6¢
Bertha (pure)	8¼¢ @ 9 ¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4¾¢
Bar	5½¢
Pipe, subject to trade discount	6½¢
Tin-Lined Pipe, subject to trade discount	15%
Block Tin Pipes, subject to trade discount	37½%
Sheet, subject to trade discount	7¾¢

Solder.

½ @ ½ (Guaranteed)	14½¢
No. 1	12¢
Extra Wiping	11¾¢ @ 1d¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 16 @ 1 6½¢
Hallett's	" .... @ 13½¢

ALUMINUM.

Prices Per Ton.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 6 00